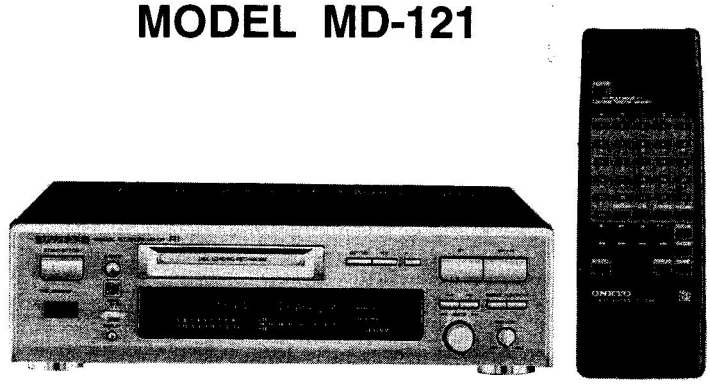
MD-121

Ref. No. 3578

ONKYO® SERVICE MANUAL

MINIDISC RECORDER
MODEL MD-121



Black model

SMP	230V AC, 50Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

SPECIFICATIONS

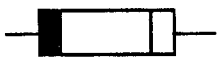
System:	MiniDisc digital audio system
Recording system:	Magnetic field modulation overwrite system
Signal read out system:	Optical non-contact
Recording time:	Max. 74 min. (when using MDW-74)
Number of revolutions:	About 400 - 900 rpm (constant linear velocity)
Error correction system:	Advanced Cross Interleave Reed-solomon code
Sampling frequency:	44.1 kHz
Number of channels:	2 (stereo)
Frequency response:	10 Hz - 20 kHz (±0.5 dB)
Signal to noise ratio:	100 dB or more when playing
Output level:	2.0 volts r.m.s.
Power supply rating:	AC 230 V, 50 Hz
Power consumption:	14 watts
Dimensions (W × H × D):	275 × 79 × 317 mm (10-13/16" × 3-1/8" × 12-1/2")
Weight:	3.0 kg (6.6 lbs.)

Specifications and features are subject to change without notice.

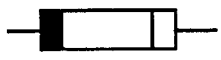
ONKYO®
AUDIO COMPONENTS

SERVICE SAFETY PRECAUTIONS

1. Replacing the fuses



This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating refer to the marking adjacent to the symbol.



Ce symbole indique que le fusible utilise est a rapide.
Pour une protection permanents, n'utiliser que des fusibles de meme type.
Ce darnier est indique la qu le present symbol est appose.

Circuit No.	Part No.	Description
F901	252086	0.16A-SE-EAWK
F902	252075	2.5A-SE-EAK

CAUTION Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer.
Discard used batteries according to the manufacture's instructions.

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CAUTION ON REPLACEMENT OF OPTIONAL PICKUP

The laser diode in the optical pickup block is sensitive to static electricity, surge current and etc. The components are liable to be damaged or its reliability remarkably deteriorated.

During repair,carefully take the following precautions. (The following precautions are included in the service parts.)

PRECAUTIONS

1.Ground for the work-desk.
Place a conductive sheet such as a sheet of copper (with impedance lower than 10Mohm) on the work-desk and place the set on the conductive sheet so that the chassis can be grounded.

2.Grounding for the test equipments and tools.
Test equipments and toolings should be grounded in order that their ground level is the same the ground of the power source.

3. Grounding for the human body.
Be sure to put on a wrist-strap that is properly grounded.
Be particularly careful when wearing synthetic fiber clothes, or air is dry.

4. Select a soldering iron that permits no leakage and have the tip of the iron well-grounded.

5. Do not check the laser diode terminals with the probe of a circuit tester or oscilloscope.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to carefully follow the instructions below when servicing.

WARNING !!

SERVICE WARNING: DO NOT APPROACH THE LASER EXIT WITH THE EYES TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

Laser Diode Properties

Material:	GaAlAs
Wavelenghth:	780nm
Emission Duration:	continuous
Laser output:	max. 5mW*

* This output is the value measure at a distance about 1.8mm from the objective lens surface on the Optical pick-up Block.

MD-121

LASER WARNING LABEL

These labels are located on the mechanism.

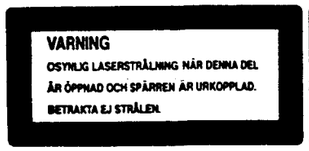
The label shown below are affixed.

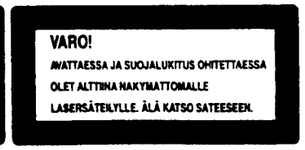
1. Warning label
   This label is location on the chassis.

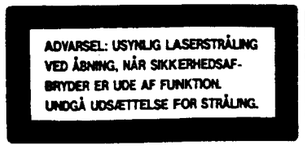
DANGER —INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK FAILED OR DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.

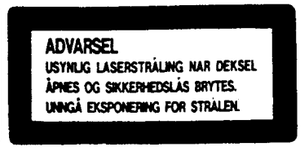
CAUTION —HAZARDOUS LASER AND ELECTROMAGNETIC RADIATION WHEN OPEN AND INTERLOCK DEFEATED

ATTENTION —RAYONNEMENT LASER ET ELECTROMAGNETIQUE DANGEREUX SI OUVERT AVEC L'ECLENCHEMENT DE SECURITE ANNULE.

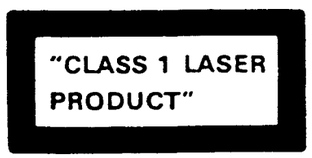








2. Class 1 label
   This label is located on the left side of rear cover.



LUOKAN 1
LASERLAITE

KLASS 1
LASER APPARAT

ADVARSEL

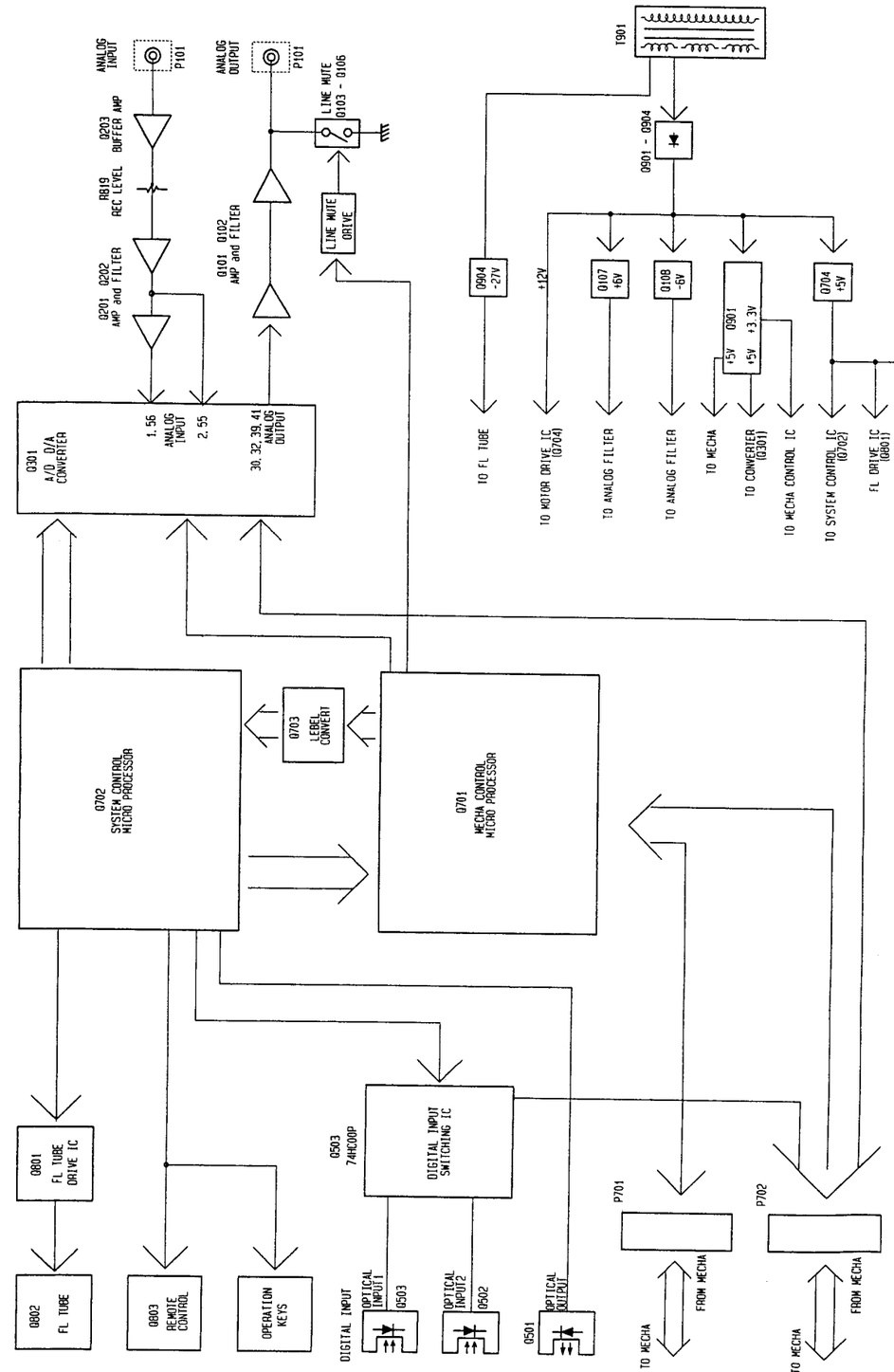
Denna maekning er anbragt på apparatets højre side og indikerer, at apparatet arbejder med laserstråler af klasse 1, hvilket betyder, at der anvendes laserstråler af svageste klasse, og at man ikke på apparatets yderside kan blive udsat for utilladelig kraftig stråling.

APPARATET BØ/R KUN ÅBNES AF FAGFOLK MED SE RLIGT KENDSKAB TIL APPARATER MED LASERSTRÅLER!

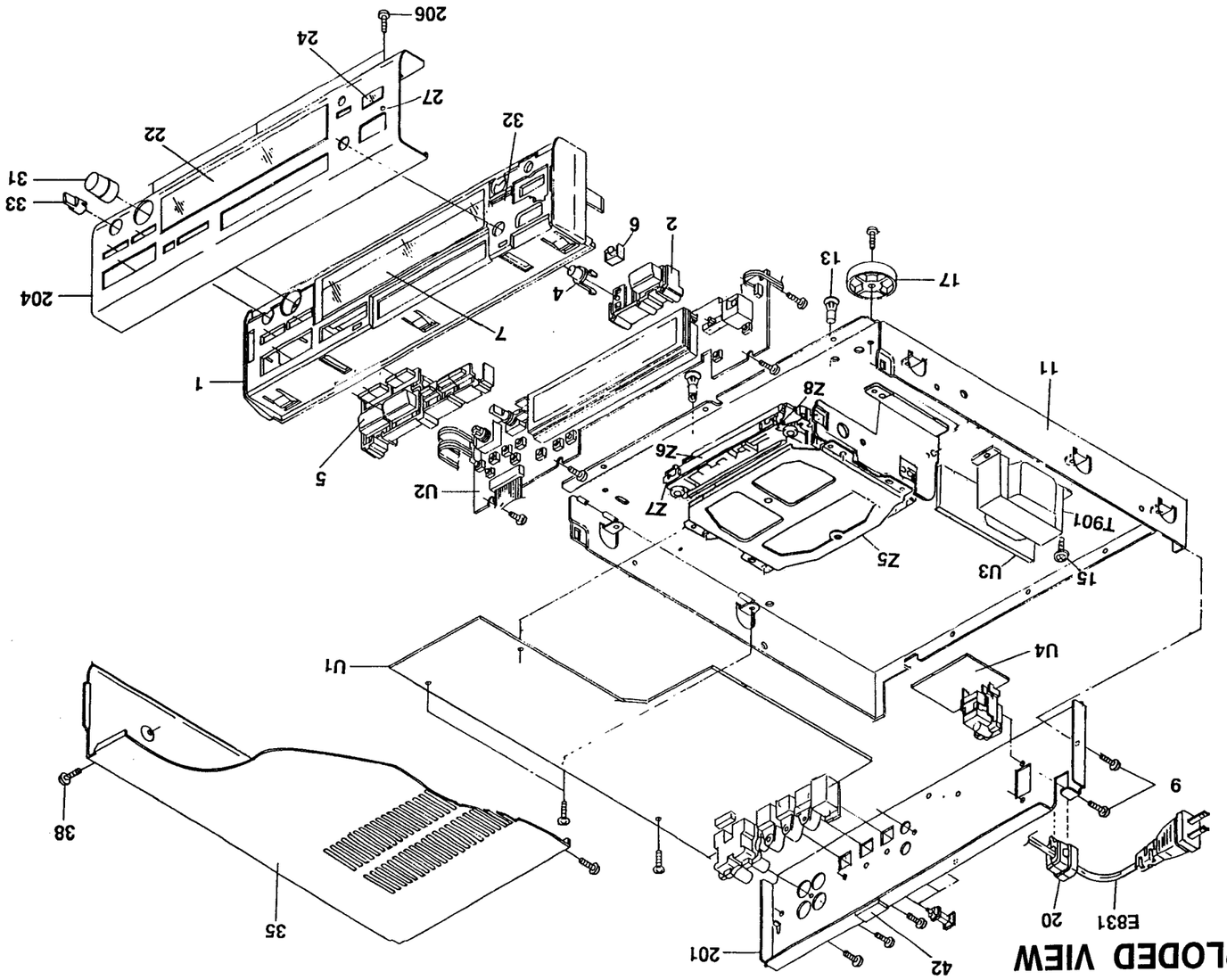
Indvendigt i apparatet er anbragt den her gengivne advarselsmærkning, som advarer imod at foretage sådnne indgreb i apparatet, at man kan komme til at udsaette sig for laserstråling.

VAROITUS! LAITTEEN KAYTTAMINEN MUULLA KUIN TASSA KAYTTOOHJEESSA MAINTULLA TAVALLA SAATTAA ALTISTAA KAYTTAJAN TURVALLISUUSLUOKAN 1 YLITTAVALLE NAKYMATTOMALLE LASERSATEILYLLE.

BLOCK DIAGRAM



EXPLODED VIEW



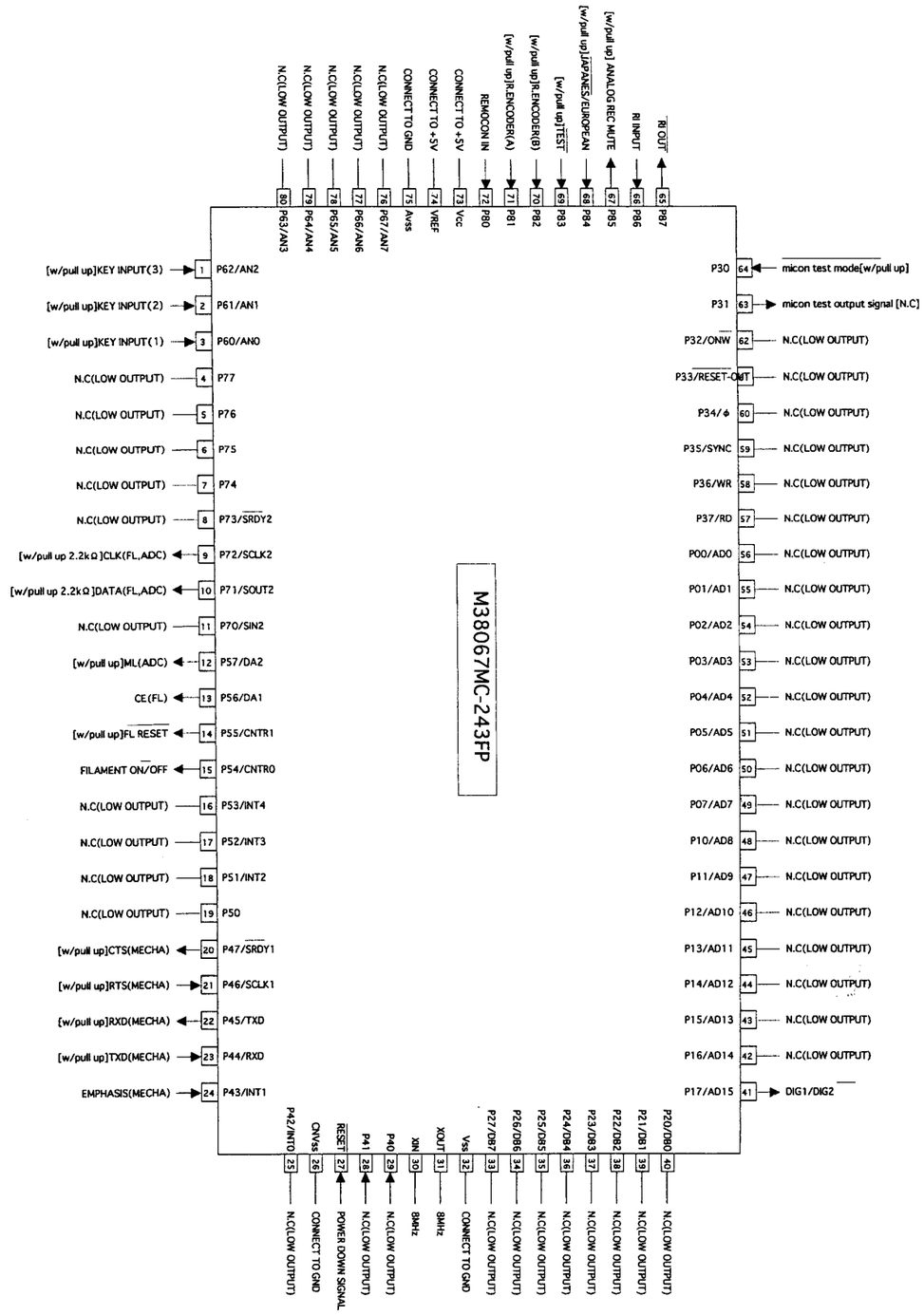
PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
1	27111044A	Front bracket AS
2	28325195	Knob (POW)AS
3	28325194	Knob (POW)
4	28325209	Knob (OPEN)
5	28325158	Knob (PLAY)
6	28325520	Knob (DIS)
7	28133340A	Back plate
9	838130088	Screw, 3TTB+8B
11	27100332A	Chassis
13	27190428A	Holder, KGLS-10RF
15	830440089	Screw, 4TTC+8C(BC)
17	27175294	Leg AS
20	27300750	Bushing #2271
22	28191719	Clear plate
24	28191665A	Clear plate (RE)
27	28198797	Facet
31	28325160	Knob (AMCS)
32	28325161	Knob (SEL)
33	28325159A	Knob (REC)
35	28184691	Top cover
38	838230088	Screw, 3TTB+8B(NI)
42	28141288	Cushion
201	27122354	Rear panel
204	27211934	Front panel
206	838430068	3TTB+6B(BC), Screw
211	28135199	Badge
E801	2045292022	NCFC5-292022, Flat flexible cable
E802	2045192022	NCFC5-192022, Flat flexible cable
E803	2045191022	NCFC5-191022, Flat flexible cable
E831	253193HIT	AS-CEE, AC Cord
E832	29362196	Label (ALL)
F901	252086	0.16A-SE-EAWK, Fuse
F902	252075	2.5A-SE-EAK, Fuse
T901	2301275	NPT-1303P, Power transformer
Z5	24650005A	MD Mechanism, MBL-3
Z6	24611629	Shatter (S)
Z7	24604117	Shaft
Z8	24611628	Washer
U1	1H361579-1B	Main circuit pc board (NAAR-6079-1B)
U2	1H361580-1B	Front circuit pc board (NADIS-6080-1B)
U3	1H361581-1B	Power supply circuit pc board (NAPS-6081-1B)
U4	1H361583-1B	AC outlet pc board (NAETC-6083-1B)

NOTE: THE COMPONENTS INENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

IC BLOCK DIAGRAM AND DESCRIPTION

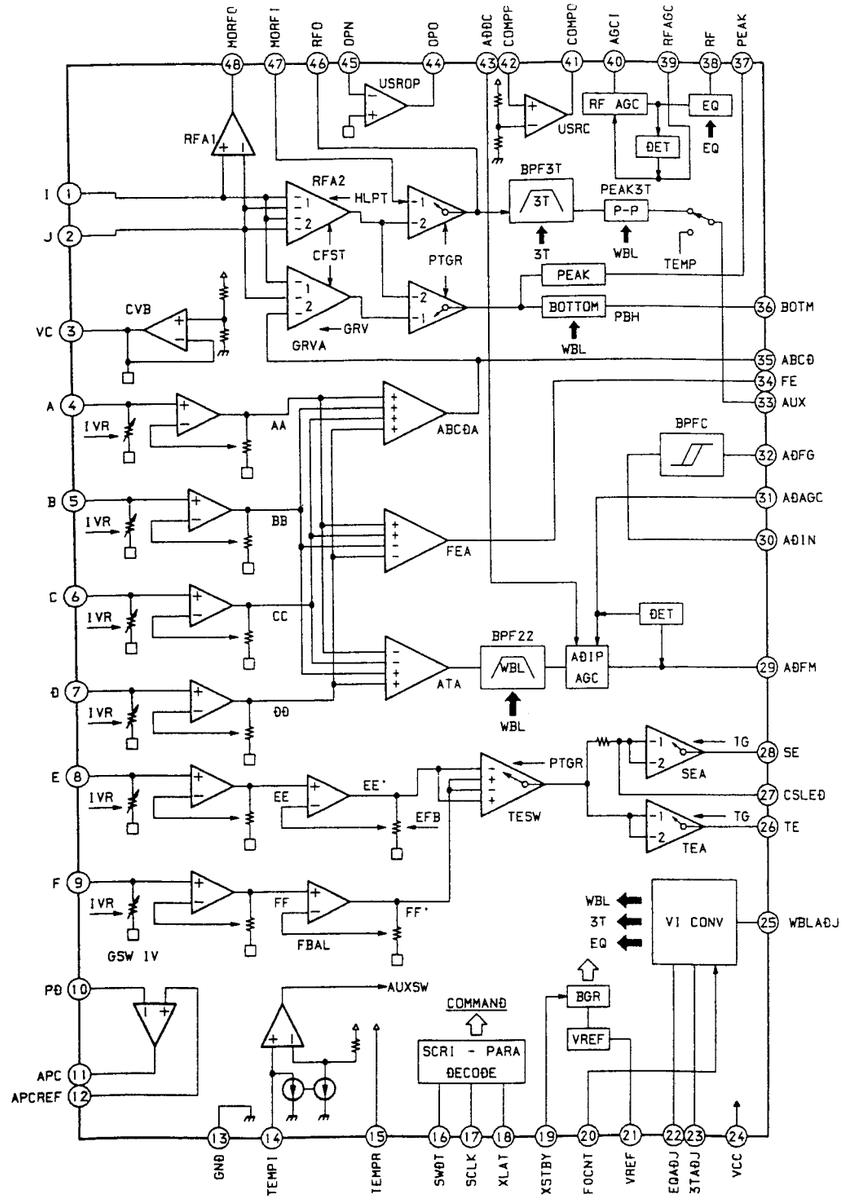
Q702 M38067MC-243FP (SYSTEM CONTROL)


M38067MC-243FP
1 P62/AN2 [w/pull up]KEY INPUT(3)
2 P61/AN1 [w/pull up]KEY INPUT(2)
3 P60/AN0 [w/pull up]KEY INPUT(1)
4 P77 N.C(LOW OUTPUT)
5 P76 N.C(LOW OUTPUT)
6 P75 N.C(LOW OUTPUT)
7 P74 N.C(LOW OUTPUT)
8 P73/SRDY2 N.C(LOW OUTPUT)
9 P72/SCLK2 [w/pull up 2.2kΩ]CLK(FL,ADC)
10 P71/SOUT2 [w/pull up 2.2kΩ]DATA(FL,ADC)
11 P70/SIN2 N.C(LOW OUTPUT)
12 P57/DA2 [w/pull up]ML(ADC)
13 P56/DA1 CE(FL)
14 P55/CNTR1 [w/pull up]FL RESET
15 P54/CNTR0 FILAMENT ON/OFF
16 P53/INT4 N.C(LOW OUTPUT)
17 P52/INT3 N.C(LOW OUTPUT)
18 P51/INT2 N.C(LOW OUTPUT)
19 P50 N.C(LOW OUTPUT)
20 P47/SRDY1 [w/pull up]CTS(MECHA)
21 P46/SCLK1 [w/pull up]RTS(MECHA)
22 P45/TXD [w/pull up]RXD(MECHA)
23 P44/RXD [w/pull up]TXD(MECHA)
24 P43/INT1 EMPHASIS(MECHA)
25 P42/INT0 N.C(LOW OUTPUT)
26 CNVss CONNECT TO GND
27 RESET POWER DOWN SIGNAL
28 P41 N.C(LOW OUTPUT)
29 P40 N.C(LOW OUTPUT)
30 XIN 8MHz
31 XOUT 8MHz
32 Vss CONNECT TO GND
33 P27/DB7 N.C(LOW OUTPUT)
34 P26/DB6 N.C(LOW OUTPUT)
35 P25/DB5 N.C(LOW OUTPUT)
36 P24/DB4 N.C(LOW OUTPUT)
37 P23/DB3 N.C(LOW OUTPUT)
38 P22/DB2 N.C(LOW OUTPUT)
39 P21/DB1 N.C(LOW OUTPUT)
40 P20/DB0 N.C(LOW OUTPUT)
41 P17/AD15 DIG1/DIG2
42 P16/AD14 N.C(LOW OUTPUT)
43 P15/AD13 N.C(LOW OUTPUT)
44 P14/AD12 N.C(LOW OUTPUT)
45 P13/AD11 N.C(LOW OUTPUT)
46 P12/AD10 N.C(LOW OUTPUT)
47 P11/AD9 N.C(LOW OUTPUT)
48 P10/AD8 N.C(LOW OUTPUT)
49 P07/AD7 N.C(LOW OUTPUT)
50 P06/AD6 N.C(LOW OUTPUT)
51 P05/AD5 N.C(LOW OUTPUT)
52 P04/AD4 N.C(LOW OUTPUT)
53 P03/AD3 N.C(LOW OUTPUT)
54 P02/AD2 N.C(LOW OUTPUT)
55 P01/AD1 N.C(LOW OUTPUT)
56 P00/AD0 N.C(LOW OUTPUT)
57 P37/RD N.C(LOW OUTPUT)
58 P36/WR N.C(LOW OUTPUT)
59 P35/SYNC N.C(LOW OUTPUT)
60 P34/φ N.C(LOW OUTPUT)
62 P32/ONW N.C(LOW OUTPUT)
63 P31 micon test output signal [N.C]
64 P30 micon test mode[w/pull up]
65 P97 RI OUT
66 P86 RI INPUT
67 P85 [w/pull up] ANALOG REC MUTE
68 P84 [w/pull up]JAPANESE/EUROPEAN
69 P83 [w/pull up]TEST
70 P82 [w/pull up]R.ENCODER(B)
71 P81 [w/pull up]R.ENCODER(A)
72 P80 REMOCON IN
73 Vcc CONNECT TO +5V
74 VREF CONNECT TO +5V
75 Avss CONNECT TO GND
76 P67/AN7 N.C(LOW OUTPUT)
77 P66/AN6 N.C(LOW OUTPUT)
78 P65/AN5 N.C(LOW OUTPUT)
79 P64/AN4 N.C(LOW OUTPUT)
80 P63/AN3 N.C(LOW OUTPUT)

PIN NO.	SYMBOL	DESCRIPTION
1	KEY INPUT(ST)	Tact switch input part ST (A/D input)
2	KEY INPUT(PO)	Tact switch input part PO (A/D input)
3	KEY INPUT(EJ)	Tact switch input part EJ (A/D input)
4	N.C	not used (Low output)
5	N.C	not used (Low output)
6	N.C	not used (Low output)
7	N.C	not used (Low output)
8	N.C	not used (Low output)
9	CLK	Serial clock output terminal (FL DRIVER,CODEC)
10	DATA	Serial clock data output terminal. (FL DRIVER,CODEC)
11	GND	not used (Low output)
12	LATCH	data latch signal output terminal for CODEC.
13	CE	Data latch signal output terminal for EFL DRIVER.
14	FL RESET	Reset signal output terminal for FL DRIVER> (at Low: reset)
15	FL ON/OFF	Filament power supply control output terminal. (at low: on)
16	GND	not used (Low output)
17	GND	not used (Low output)
18	GND	not used (Low output)
19	GND	not used (Low output)
20	MECHA CTS	Mechanism microprocessor CTS terminal output.
21	MECHA RTS	Mechanism microprocessor DATA terminal input.
22	MECHA RXD	Mechanism microprocessor RXD terminal output.
23	MECHA TXD	Mechanism microprocessor TXD terminal input.
24	EMPHASIS	Emphasis information input terminal. (High:EMPHASIS ON SOURCE)
25	DARE	not used (Low output)
26	GND	GND
27	POWER DOWN	System reset signal input terminal. (at Low: reset)
28	GND	not used (Low output)
29	GND	not used (Low output)
30	XIN	Ceramic oscillator (8MHz)
31	XOUT	Ceramic oscillator (9MHz)
32	Vss	GND
33	GND	not used (Low output)
34	GND	not used (Low output)
35	GND	not used (Low output)
36	GND	not used (Low output)
37	GND	not used (Low output)
38	GND	not used (Low output)
39	GND	not used (Low output)
40	GND	not used (Low output)
41	DIG.1/DIG.2	Digital input selector signal output terminal. (at High: digital input 1)

PIN NO.	SYMBOL	DESCRIPTION
42	N.C	not used (Low output)
43	GND	not used (GND)
44	GND	not used (GND)
45	GND	not used (GND)
46	GND	not used (GND)
47	GND	not used (GND)
48	GND	not used (GND)
49	GND	not used (GND)
50	GND	not used (GND)
51	GND	not used (GND)
52	GND	not used (GND)
53	GND	not used (GND)
54	GND	not used (GND)
55	GND	not used (GND)
56	GND	not used (GND)
57	GND	not used (GND)
58	GND	not used (GND)
59	GND	not used (GND)
60	GND	not used (GND)
61	GND	not used (GND)
62	GND	not used (GND)
63	NC	Test signal output terminal for microprocessor. (normal: not used)
64	MICON TEST	Test signal input terminal for microprocessor. (at Low: check mode)
65	RI OUT	RE cord output terminal (Logic output)
66	RI INPUT	RI cord input terminal.
67	ANALOG REC MUTE	Analog rec mute control output terminal. (at high : on)
68	EXT.	Japan/Europe area select input terminal. (at low: japan)
69	MECHA TEST	Test mode detector input terminal. (at service)
70	R.ENCODER(2)	Phase input terminal for Rotary encoder
71	R.ENCODER(1)	Rotary encoder for palls input terminal.
72	REMOCON IN	Remote control signal
73	Vcc	Power supply. (connect +5v)
74	VREF	A/D,D/A converter power supply circuit.。 (connect +5V)
75	GND	A/D,D/A converter power supply terminal. (GND converter power supply terminal)
76	GND	not used (Low output)
77	GND	not used (Low output)
78	GND	not used (Low output)
79	GND	not used (Low output)
80	N.C	not used (Low output)

IC101 CXA2523R (RF AMP.)

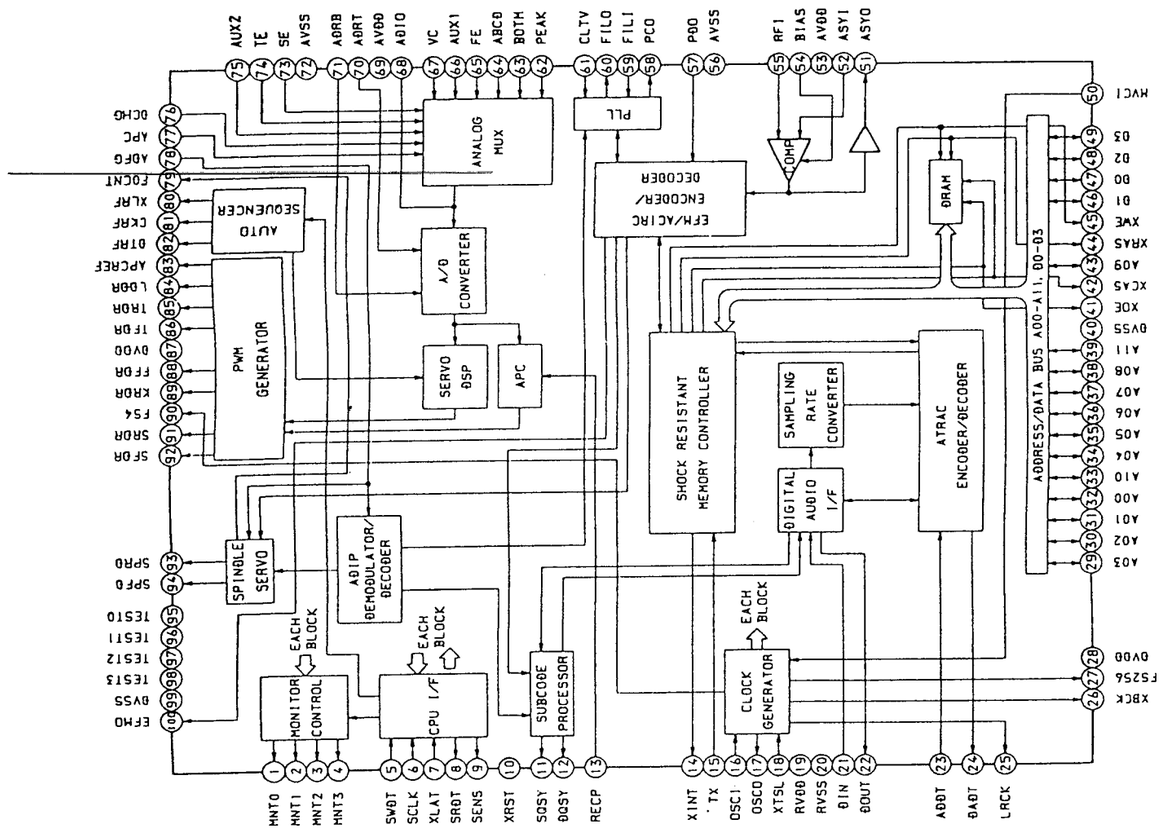


IC101 CXA2523R (RF AMP.)

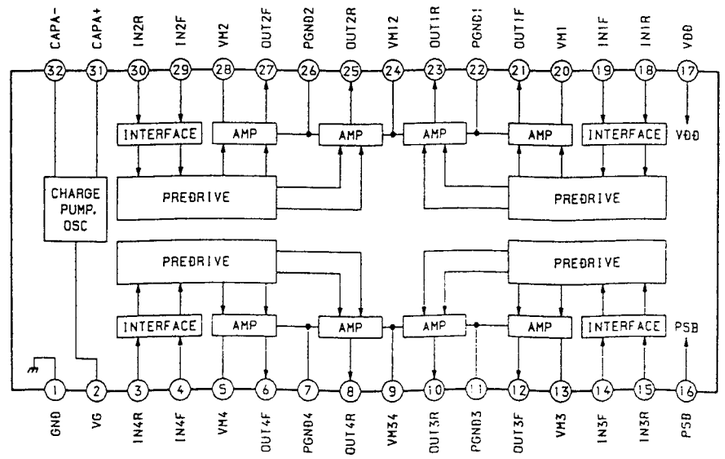
PIN NO.	SYMBOL	I/O	DESCRIPTION
1	I	I	RF signal I input for I-V converter
2	J	I	RF signal J input for I-V converter
3	VC	O	Mid-point voltage input terminal.
4 ~ 9	A ~ F	I	Input signal for optical pick-up detector
10	PD	I	Optical monitor input
11	APC	O	Laser APC output
12	APCREF	I	Laser power setting standard voltage input
13	GND	-	GND
14	TEMP	I	Thermal sensor connect terminal
15	TEMPR	O	Thermal sensor standard voltage output
16	SWDT	I	Serial data input for CXD2650R
17	SCLK	I	Serial clock input for CXD2650R
18	XLAT	I	Latch signal input for CXD2650R (at L: latch)
19	XSTBY	I	Standard signal input (at L: standby)
20	F0CNT	I	Internal circuit for CXD2650R
			(BFF22, BPF3T,EQ internal frequency control voltage input)
21	VREF	O	Standard voltage output (not used)
22	EQADJ	I/O	Internal frequency setting terminal for EQ Internal circuit
23	3TADJ	I/O	Internal frequency setting terminal for BPF3T Internal circuit
24	Vcc	-	Power supply +3V.
25	WBLADJ	I/O	Internal frequency setting terminal for BPF22 internal circuit
26	TE	O	Tracing error signal output for CXD2650R
27	CSLE	-	Sled error signal LPF external condenser connect terminal
28	SE	O	Sled error signal output for CXD2650R
29	ADFM	O	FM signal output for ADIP
30	ADIN	I	ADIP signal comparator input.
31	ADAGC	-	Capacitor connection terminal for ADIP
32	ADFG	O	ADDIP double signal output for CXD2650R
33	AUX	O	I3 signal/Thermal signal output for CXD2650R
34	FE	O	Focus error signal output for CXD2650R
35	ABCD	O	Optical signal output for CXD2650R
36	BOTM	O	RF/ABCD bottom hold signal output for CXD2650R
37	PEAK	O	RF/ABCD peak hold signal output for CXD2650R
38	RF	O	RF equalizer output for CXD2650R
39	RFAGC	-	Capacitor connection terminal for RF AGC circuit
40	AGCI	I	Input for RF AGC circuit
41	COMPO	O	Output for user comparator (not used)
42	COMPP	I	Input for user comparator (at L)
43	ADDC	I/O	Low frequency cut off
44	OPO	O	User ope-amp output (not used)
45	OPN	I	User ope-amp invert output (at L)
46	RFO	O	RF amp output
47	MORFI	I	Input for RF signal group
48	MORFO	O	RF signal output for group

APC : Auto Power Control
AGC: AutoGain Control

IC121 CXD2650R (ENCODER / DECODER, ATRAC)



IC152 BH6511FS (SLED / SPRINDLE MOTOR DRIVE, FORCOS / TRACKING COIL DRIVE)



IC121 CXD2650R (1/2)

PIN NO.	PIN NAME	I/O	FUNCTION
1	MNT0 (FOK)	O	FOK signal output from system control
2	MNT1 (SHCK)	O	Track jump detect signal output from system control
3	MNT2 (XBUSY)	O	Monitor 2 output from system control
4	MNT3 (SLOC)	O	Monitor 3 output from system control
5	SWDT	I	Write data signal input to system control
6	SCLK	I (S)	Serial clock signal input from system control
7	XLAT	I (S)	Serial latch signal input from system control
8	SRDT	O (3)	Write data signal output to system control
9	SENS	O (3)	Interruption status (SENSE) output to system control
10	XRST	I (S)	Reset input signal from system control
11	SQSY	O	Sub-cord Q sync. (SCOR) output to system control
12	DQSY	O	Digital in U-bit CD format sub-cord to system control
13	RECP	I	Laser power select input from system control
14	XINT	O	Interruption status output to system control
15	TX	I	Recording data output request input from system control
16	OSCI	I	System clock input (512Fs=22.5792MHz)
17	OSCO	O	System clock output (512Fs=22.5792MHz) (not used)
18	XTSL	I	System clock frequency setting terminal. "L": 45.1584MHz "H":22.5792MHz (at "H")
19	DVDD	-	Digital section power supply (+3V)
20	DVSS	-	Digital section GND
21	DIN	I	Digital audio input (Optical input)
22	DOUT	O	Digital audio output (Optical output)
23	ADDT	I	Input data from A/D converter
24	DADT	O	Data output to D/A converter
25	LRCK	O	A/D, D/A converter LR clock output (44.1kHz)
26	XBCK	O	A/D, D/A converter bit clock output (2.8224MHz)
27	FS256	O	11.2896MHz clock output (not used)
28	DVDD	-	Digital power supply (+3.0V)
29~32	A03 ~A00	O	DRAM addles output (not used)
33	A10	O	DRAM addles output (not used)
34~38	A04~A08	O	DRAM addles output (not used)
39	A11	O	DRAM addles output (not used)
40	DVSS	-	Digital section GND
41	XOE	O	DRAM output enable output (not used)
42	XCAS	O	DRAM CAS signal output (not used)
43	A09	O	DRAM addles output (not used)
44	XRAS	O	DRAM RAS signal output (not used)
45	XWE	O	DRAM write enable signal output (not used)
46	D1	I/O	DRAM data input/output (not used)
47	D0	I/O	DRAM data input/output (not used)
48,49	D2,D3	I/O	DRAM data input/output (not used)
50	MVCI	I (S)	Clock input from external VCO (connect to "L")
51	ASYO	O	Playback EFM dual signal output
52	ASYI	I (A)	Playback EFM compalator slice level input
53	AVDD	-	Analog section power supply (+3V)
54	BIAS	I (A)	Playback EFM comparator bias current input
55	RFI	I (A)	Playback EFM RF signal input
56	AVSS	-	Analog section GND
57	PDO	O (3)	Clock playback analog PLL plus comparator output of Playback EFM (not used)
58	PCO	O (3)	Rec/playback EFM master PLL plus comparator output
59	FILI	I (A)	Rec./playback section master PLL filter input
60	FILO	O (A)	Rec./playback section master PLL filter output
61	CLTV	I (A)	Rec./playback section master PLL inside VCO control voltage input
62	PEAK	I (A)	Optical signal peek hold input from CXA2523R
63	BOTM	I (A)	Optical signal bottom hold input from CXA2524R
64	ABCD	I (A)	Optical signal input from CXA2523R
65	FE	I (A)	Focus error signal input from CXA2523R
66	AUX1	I (A)	AUX A/D input

IC121 CXD2650R (2/2)

PIN NO.	PIN NAME	I/O	FUNCTION
67	VC	I (A)	Center voltage (+1.5V) input from CXA2523R
68	ADIO	O (A)	Monitor output of A/D converter input signal (not used)
69	AVDD	-	Analog section power supply (+3V)
70	ADRT	I (A)	A/D converter operation range upper limit voltage input (connect to "H")
71	ADRB	I (A)	A/D converter operation range lower limit voltage input (connect to "L")
72	AVSS	-	Analog section GND
73	SE	I (A)	Sled error signal input from CXA2523R
74	TE	I (A)	Tracking error signal input from CXA2523R
75	AUX2	I (A)	AUX A/D input (connect to "L")
76	DCHG	I (A)	Connect to power supply (+3V)
77	APC	I (A)	Laser digital APC error signal input (connect to "L")
78	ADFG	I (S)	ADIP dual FM signal input from CXA2523R (22.05 ± 1kHz)
79	F0CNT	O	Filter fo control output from CXA2523R
80	XLRF	O	Control lurch output from CXA2523R
81	CKRF	O	Control clock output from CXA2523R
82	DTRF	O	Control data output form CXA2523R
83	APC REF	O	Laser APC references PWM output
84	LDDR	O	Laser digital APC PWM output (not used)
85	TRDR	O	Tracking save drive PWM output (-)

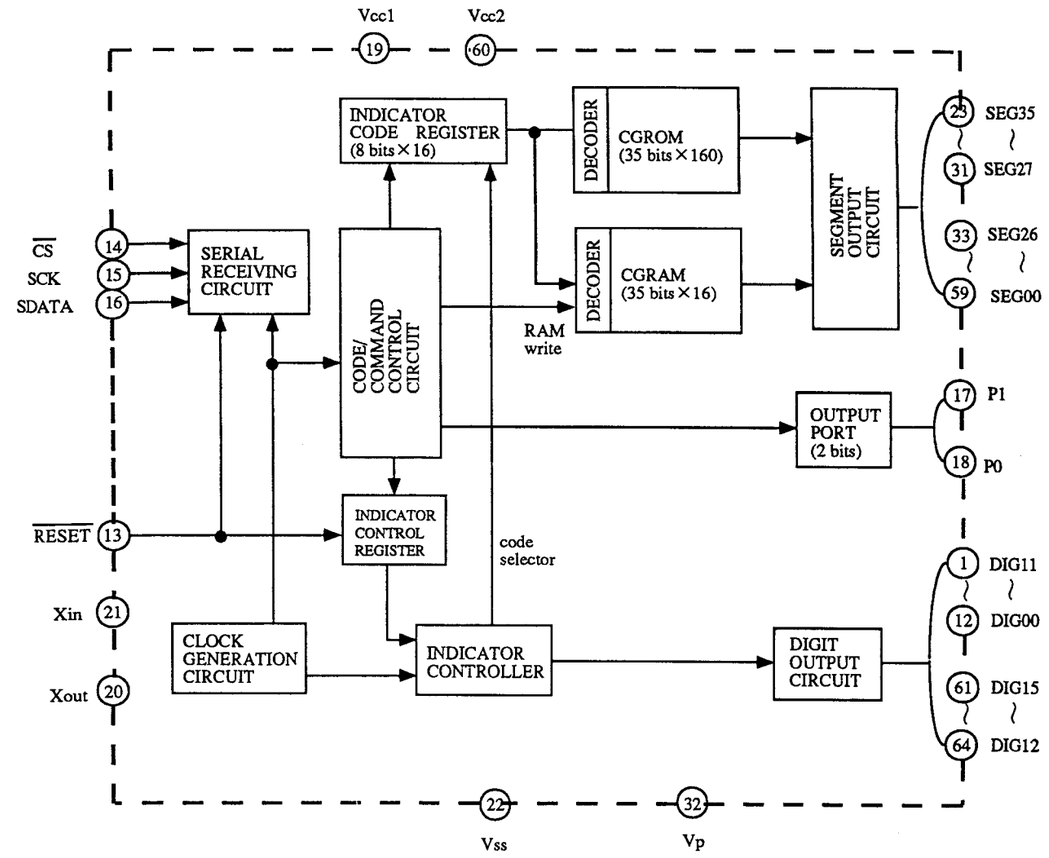
Q701 MB-M3 (MECHANISM CONTROL MICROPROCESSOR) (1/2)

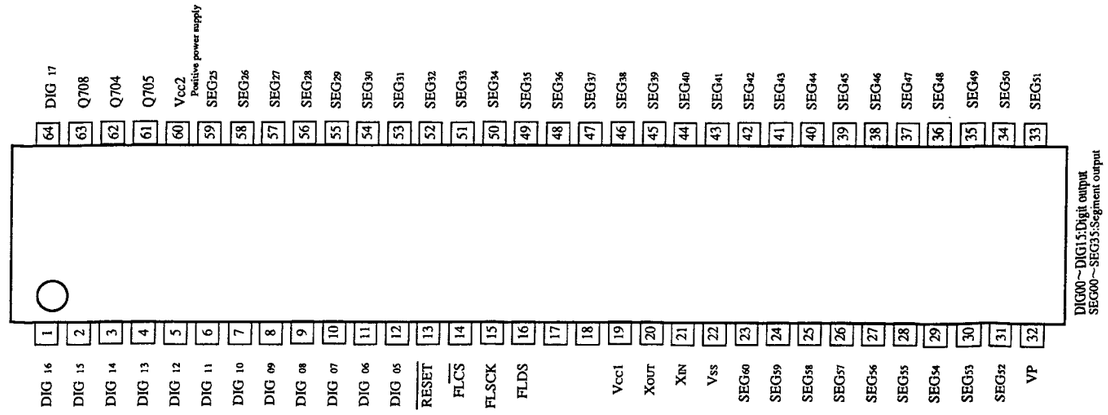
PIN NO.	SYMBOL	I/O	DESCRIPTION
1	NC		Open
2	NC		Open
3		I	Connect to "H"
4		I	Connect to "H"
5		I	Connect to "H"
6	CHUCKINSW	I	Detect input for chucking switch (at detect: "L")
7	NC		
8	PACK OUTSW	I	Sensor input for Back out switch (atdetect : "L")
9			connect to "L"
10			connect to "L"
11	AVSS		connect to "L"
12	XINT	I	Interruption stags input for IC121
13	P.DOWN	I	Power down detect input (at normal: "H")
14			connect to "L"
15	SQSY	I	Sub-cord Q sync. input
16	DQSY	I	Digital input U-bit. Sub-Q sync input for CD format
17			connect to "L"
18			connect to "L"
19			connect to "L"
20	SYS. RST	I	System reset signal input
21	TEST	I	GND connect.
22	+3.3V		Power suppply input +3.3V.
23	VBAT	I	Back up power supply terminal
24	X-OUT		Clock output (32kHz)
25	X-IN		Clock input (32kHz)
26	GND		GND terminal
27	XOUT		Clock output (12MHz)
28	XIN		Clock input (12MHz)
29	GND		GND terminal
30	NC		Open
31			connect to "L"
32	SENS	I	Internal status input for IC121
33	SHOCK	I	Chock detector signal input for IC121
34			connect to "L"
35			connect to "L"
36	STB	O	Strobe signal output for power supply circuit
37	REC-P	I	Detect input for rec position switch. (at rec: "L")
38	PB-P	I	Detect input for PB position switch. (at PB: "L")
39	LDLOW	O	Loading speed select signal output
40	NC		open
41	MNT2	I	Internal status input for IC121
42	MNT3	I	Internal status input for IC121
43	NC		open
44			connect to "L"
45			connect to "L"
46	NC		Open
47	GND		GND
48	+3.3V		Power supply input (+3.3V)
49			connect to "L"
50			connect to "L"
51			connect to "L"
52	SDA	I/O	Data signal input for IC171
53	SCL	O	Clock signal output for IC171
54			connect to "L"
55			connect to "L"
56			connect to "L"
57	RXD	I	RS232C terminal
58	TXD	O	RS232C terminal
59	RTS	O	RS232C terminal
60	CTS	I	RS232C terminal
61			connect to "L"
62			connect to "L"
63			connect to "L"
64			connect to "L"

Q701 MB-M3 (MECHANISM CONTROL MICROPROCESSOR) (2/2)

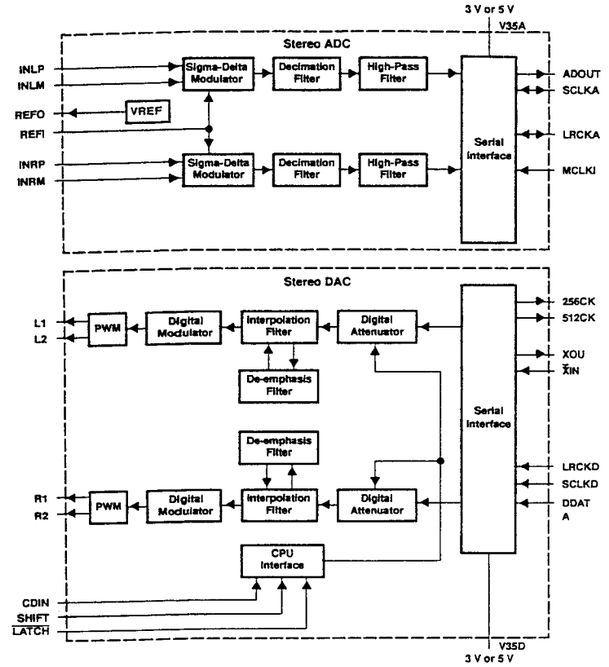
PIN NO.	SYMBOL	I/O	DESCRIPTION
65	GND		GND terminal
66	+3.3V		Power supply input (+3.3V)
67	SCLK	I/O	Clock signal output to serial bus
68	SWDT	I/O	Write data signal output to serial bus.
69	SRDT	I	Read data signal input from serial bus.
70	NC		
71	NC		Open
72	NC		Open
73	NC		Open
74			at "H"
75	LDON	O	Laser on/off control output. (at on: "H")
76	NC		Open
77	FOK	I	FOK signal output from IC121
78	NC		Open
79	NC		Open
80	WRPWR	O	Laser power select signal output to Optical block
81	DIG-RST	O	Digital section reset signal output
82	NC		Open
83	DA-RST	O	Reset signal output to DA converter
84	NC		Open
85	NC		Open
86	MOD	O	Laser modulation select signal output
87	NC		Open
88	NC		Open
89	SCTX	O	Write data transmit timing output to IC121
90	XLATCH	O	Latch signal output to serial bus
91	NC		Open
92	NC		Open
93	AMUTE	O	Line output mute output (at "L": mute)
94	LDOUT	O	Loading motor control output
95	LDIN	O	Loading motor control output
96	LIMITIN	I	Detect input from limit in switch (at "L": limit in)
97	PROTECT	I	Detect input from protect switch (at "H": protect)
98	REFLECT	I	Detect input from reflect switch (at "H": low reflect)
99	GND		GND
100	+3.3V		Power supply input +3.3V.

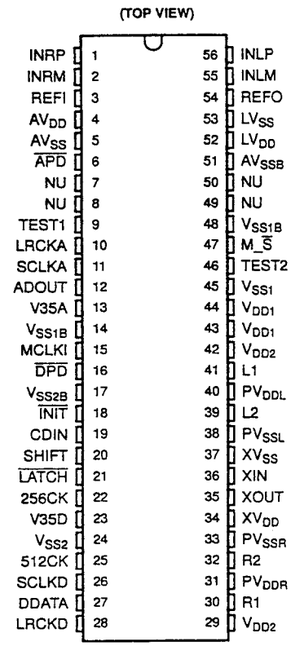
Q801 M66004FP (LCD Driver)

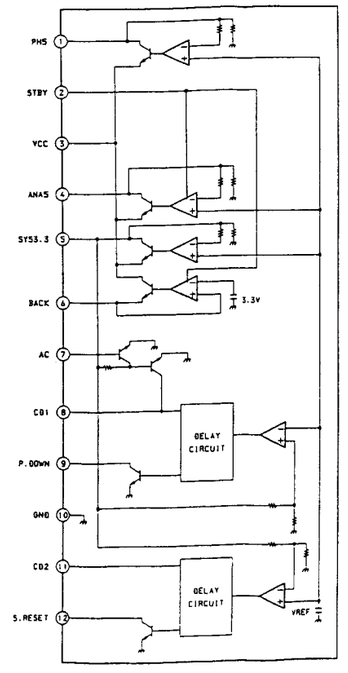




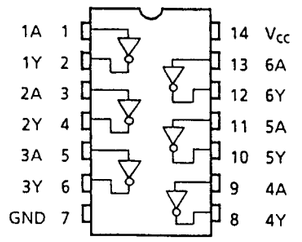
Q301 TLC320AD75C (D/A CONVERTER)







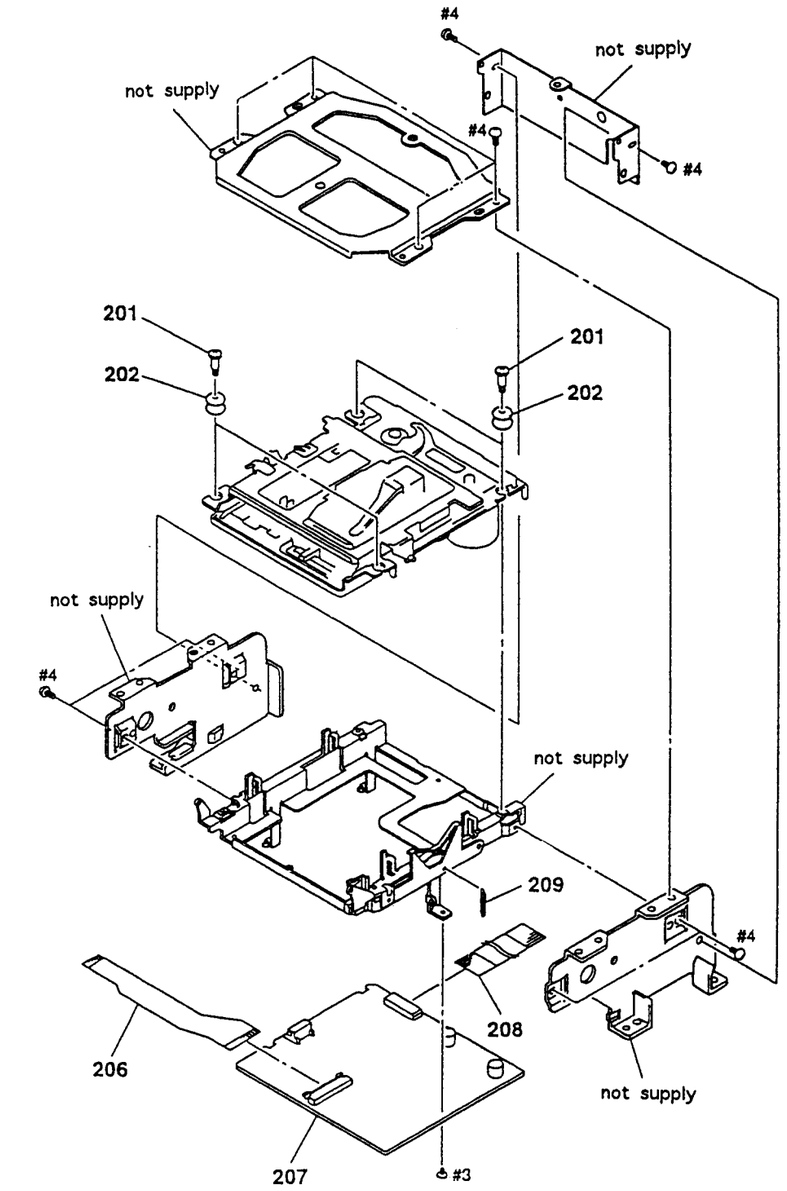
Q951 LA5620 (VOLTAGE REGULATOR)



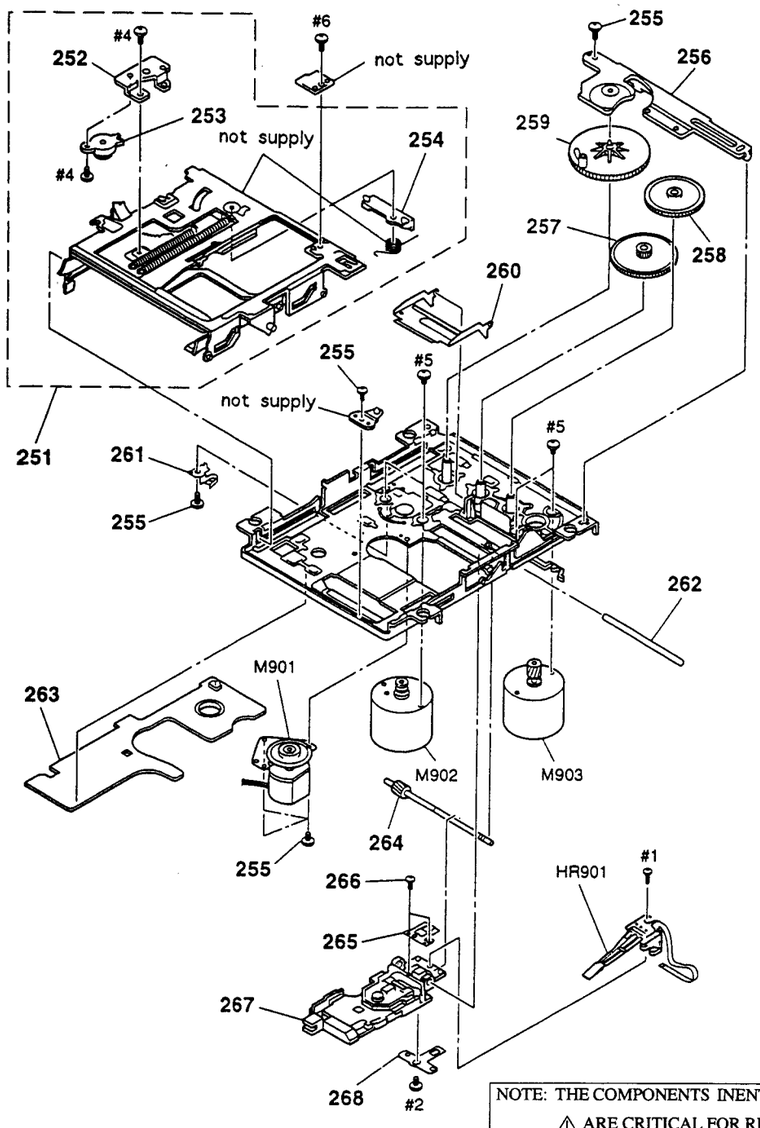
A	Y
L	H
H	L

Q504 TC74VHCT04F

MD MECHANISM EXPLODED VIEW



REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
201	4628-167-01	Screw	207	A4699-615-A	BD pc board ass'y
202	4987-327-01	Insulator	208	1777-517-11	Flat cable (15 wire)
206	1660-966-11	Flexible flat cable, Optical pick-up	209	4987-910-01	Spring coil



NOTE: THE COMPONENTS INENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

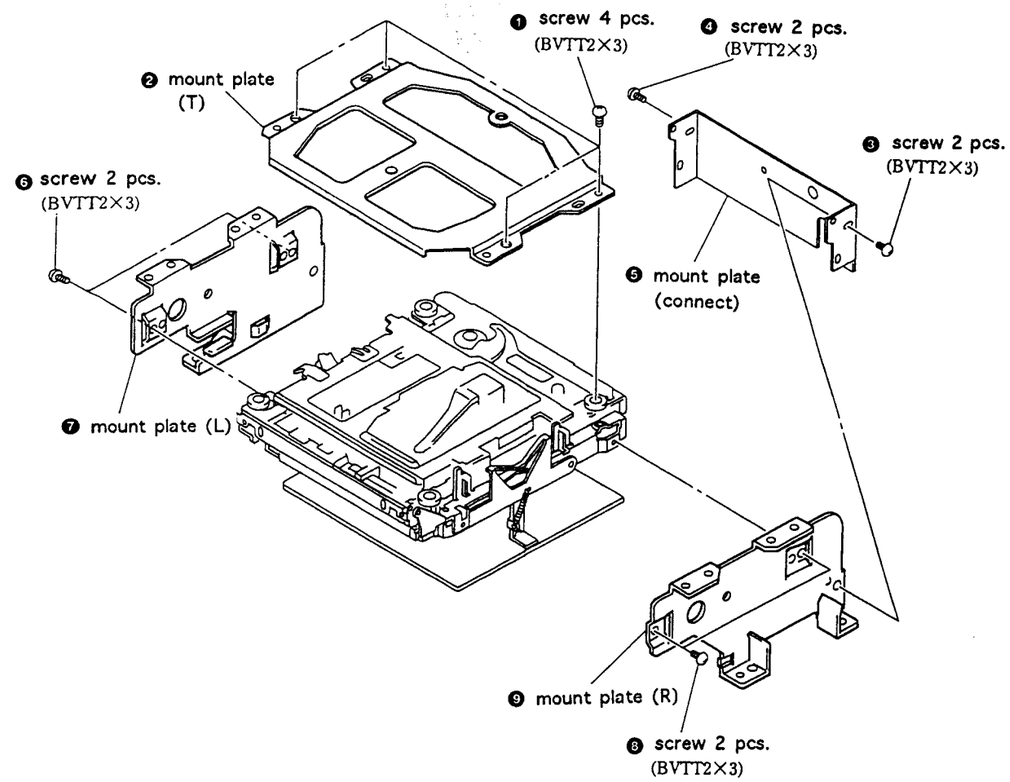
REF. NO.	PART NO.	DESCRIPTION
251	A4672-138-A	Slider ass'y
252	4983-439-01	Bracket (Dumper)
253	3953-235-01	Oil dumper
254	4983-437-01	Slider (cam)
255	3342-375-11	Special screw (M1.7X1.4)
256	4979-890-31	Bracket (Gear)
257	4979-898-01	Gear (LB)
258	4979-899-01	Gear (LC)
259	4979-897-21	Gear (LA)
260	4979-885-01	Lever (Head up)
261	4979-906-01	Leaf spring (lead screw)

REF. NO.	PART NO.	DESCRIPTION
262	4984-556-01	Shaft (main shaft)
263	1661-774-11	SW pc board
264	A3304-200-A	Lead screw ass'y
265	4963-914-02	Luck (inserter)
266	3366-890-11	nylon lock (M1.4)
267	⚠ 8583-028-01	Optical pick-up (KMS-260A/J1N)
268	4987-061-01	Spacer (luck)
HR901	1500-396-11	Over write head
M901	A4672-135-A	Sprindle motor ass'y
M902	A4672-133-A	Slid motor ass'y
M903	A4672-134-A	loading motor ass'y

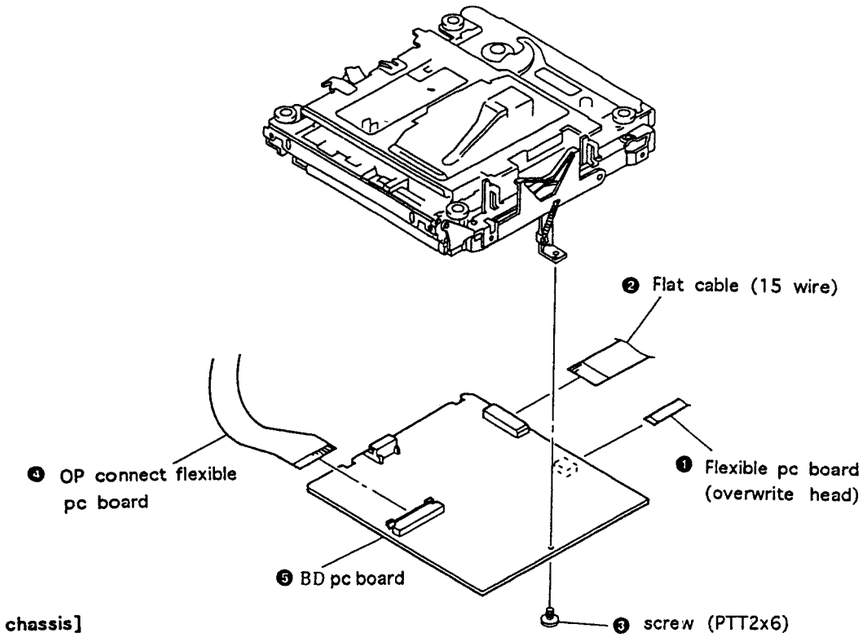
MD MECHANISM DISASSEMBLY

• Remove the parts in numerical order.

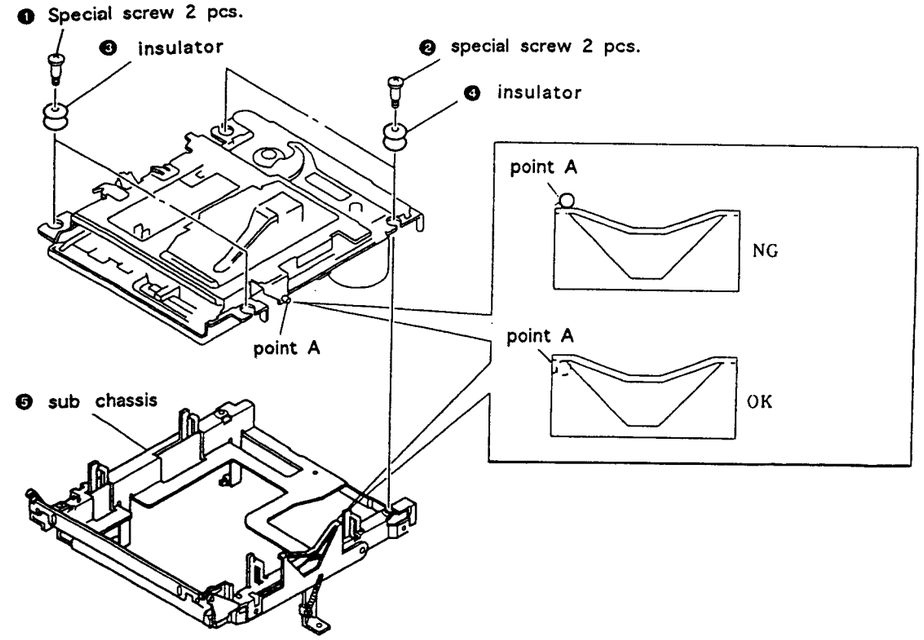
[mount plate (T),(L),(R)]



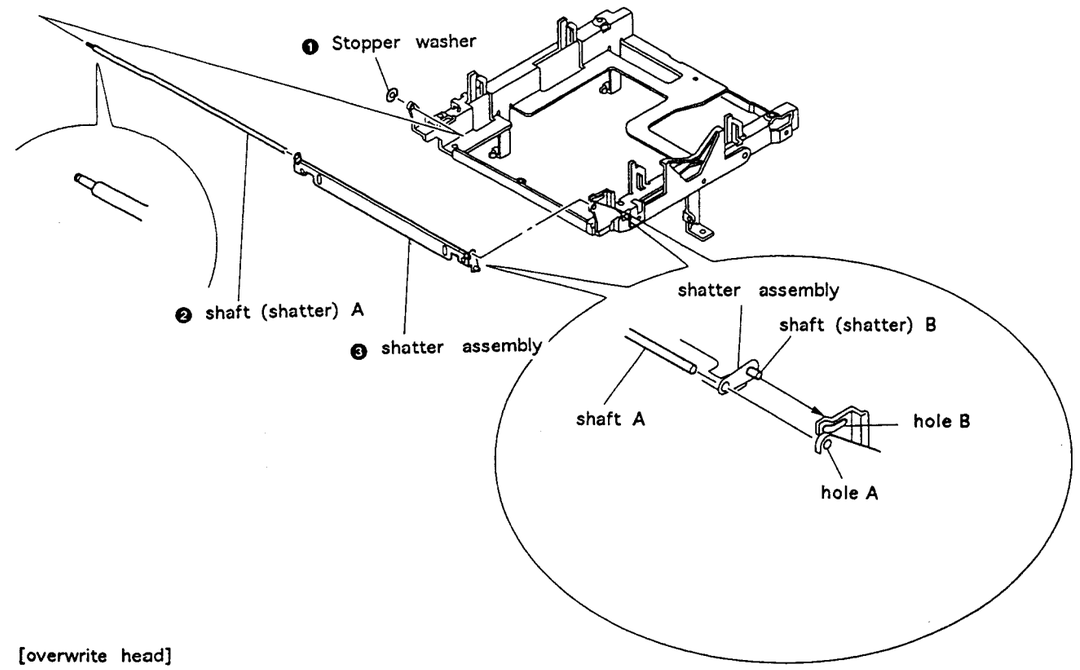
[DB pc board]



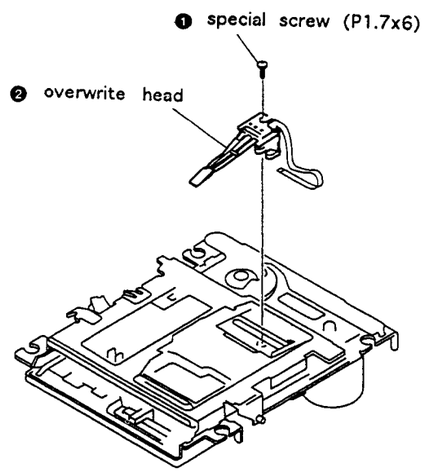
[Sub chassis]



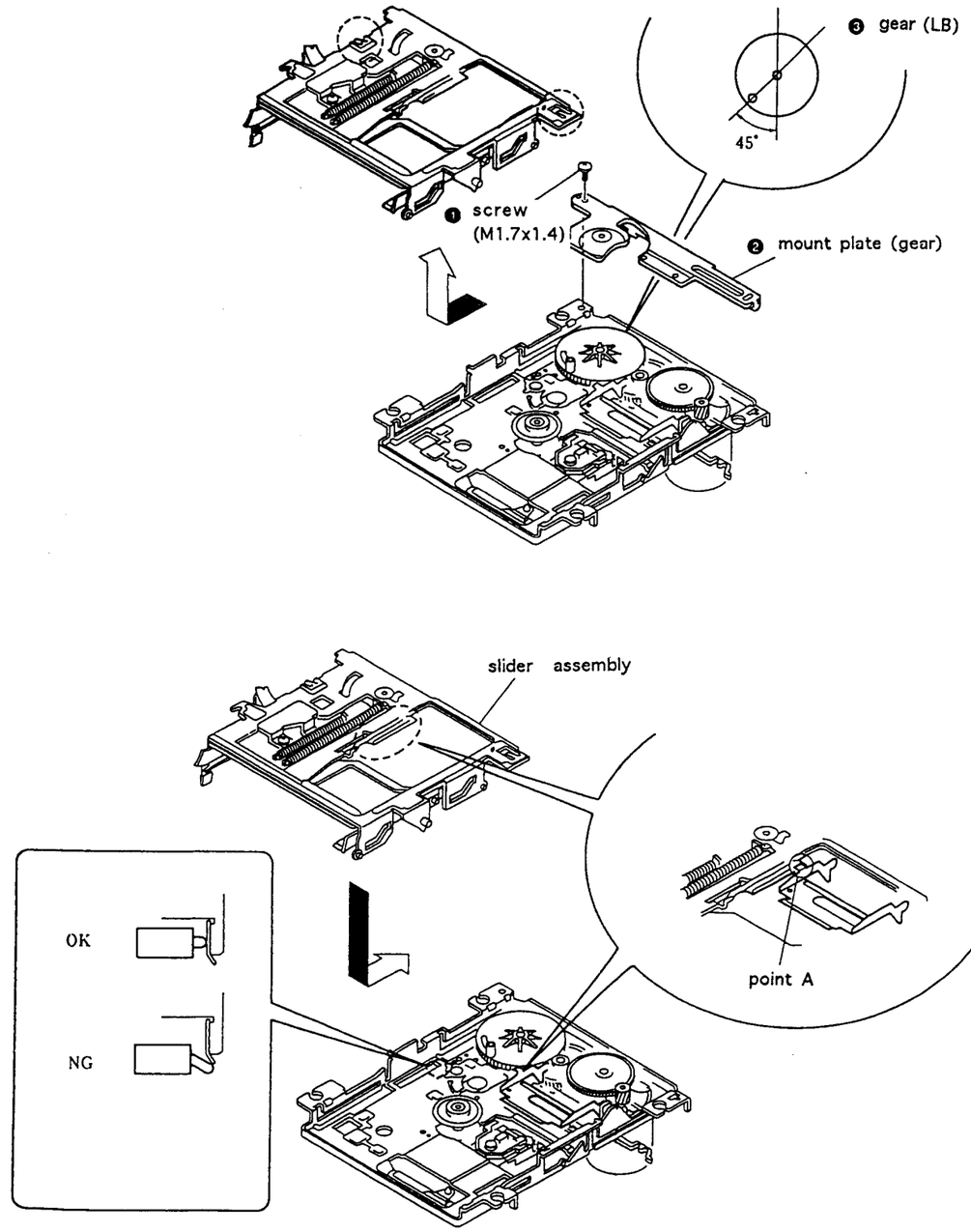
[Shatter assembly]



[overwrite head]



[slider assembly]



1. TEST MODE

1.1 Precaution for Using the Test Mode

1. In the test mode, the loading related movement does not correspond with the test operation.
   Be sure that the disc is stopped completely before replacing the disc.
   Pressing the EJECT key when a disc is rotating in continuous play/recording, etc. does not stop the rotation of the disc, causing the rotating disc to be ejected.
   Be sure to press the EJECT key while pressing the NO key.
2. In the test mode, the open/close state of the record-protect tab is not detected and therefore, if the unit enters a laser power emitting mode such as continuous recording mode (CREC MODE) and traverse adjustment mode (EFBAL ADJUST), the recorded contents will be erased regardless of the position of the record-protect tab. If a disc whose contents must not be erased is used in the test mode, be careful not to select the continuous recording mode or traverse adjustment mode.

1.2 Setting the Test Mode

1. Connect the pin 69 of Q702 (M38067MC-243FP) and GND.
2. Plug in the power cord of the unit into a wall outlet.

1.3 Canceling the Test Mode

Unplug the power cord of the unit from the wall outlet.

1.4 Basic Operation in the Test Mode

In the test mode, all operations are made through three controls: AMCS knob, YES key and NO key.
The functions of these controls are shown below.

Function name	Function
AMCS knob	Changes the parameter and test item.
YES key	Proceeds to the next step or finalizes the operation.
NO key	Returns to the previous step or aborts the operation.

1.5 Selecting the Test Item

Select the desired test item from the following eight items by turning the AMCS knob.

Display information	Test item
TEMP ADJUST	Temperature compensation offset adjustment
LDPWR ADJUST	Laser power adjustment
LDPWR CHECK	Laser power adjustment
EFBAL ADJUST	Traverse adjustment
FBIAS ADJUST	Focus bias adjustment
FBIAS CHECK	Focus bias adjustment
CPLAY MODE	Continuous play mode
CREC MODE	Continuous recording mode

For details of individual test items, see the applicable section in "2. Electrical Adjustments".
If you select a wrong test item, press the NO key to deselect the item.
* EEP MODE (non-volatile memory mode) is not used for servicing.
If you select this item by mistake, press the NO key immediately to deselect the item.

1.6 Functions of Other Controls

Control name	Function
▷‖	Causes continuous playing when stopped; Turns ON/OFF the tracking servo when in continuous play.
■	Stops continuous playing/recording.
▷▷	Moves the thread to outside while the key is pressed.
◁◁	Moves the thread to inside while the key is pressed.
●	Starts/stops recording during continuous play.
PLAY MODE	Switches spindle servo mode (between "CLV" and "A") each time the key is pressed.
DISPLAY	Switches display mode each time the key is pressed.

Note: The open/close state of the record-protect tab will not be detected during the test mode. Remember that pressing the ●(REC) key erases the recorded contents regardless of the position of the record-protect tab.

1.7 Meanings of Other Display Information

Display information	Mode		
	Lit	Not Lit	Flashing
▷	In continuous play	Stopped	
‖	Tracking servo OFF	Tracking servo ON	
REC	Recording mode ON	Recording mode OFF	
CLOCK	CLV LOCK	CLV UNLOCK	
TRACK	Bit	Group	
DISC	High reflection	Low reflection	
DATE	CLV-S	CLV-A	
A.SPACE	ABCD adjustment completed		
A-B	Focus auto gain successful		Focus auto gain successful
	Tracking auto gain successful		Tracking auto gain failed

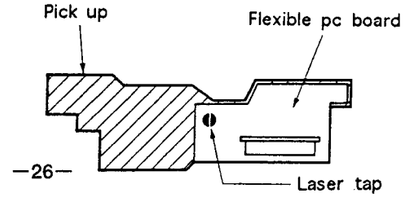
2. ELECTRICAL ADJUSTMNETS

2.1 Precautions for Checking Laser Emission from the Laser Diode

When checking the emission of laser from the laser diode during adjustments, never it from directly above the laser diode. Doing so may cause loss of your eyesight.

2.2 Precautions for Handling the Optical Pickup (KMS-260A)

The laser diode inside the optical pickup is easily damaged by static electricity.
When handling the optical pickup, solder-bridge the laser tap located on the flexible circuit board.
If you are disconnecting the optical pickup, provide solder-bridging before removing it;
Do not remove the solder bridging before reconnecting the optical pickup.
Also, tape sufficient preventive measures against static electricity when working on it.
It is also noted that the flexible circuit board must be handled carefully because its wiring is easily broken.



2.3 Precautions for Adjustments

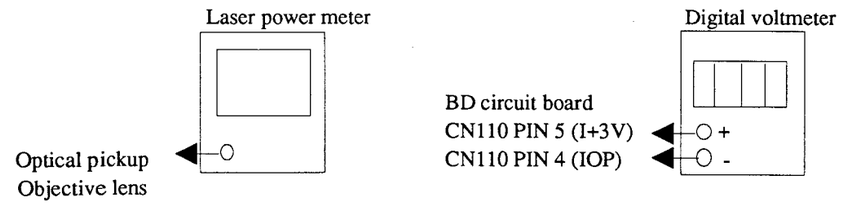
1) Whenever you have replaced the optical pickup, adjust the laser power.
2) Conduct adjustments in the test mode.
   Exit from the test mode if you have finished adjustments.
3) Use the following test disc and measuring instruments.

   CD test disc: TGYS-1
   Laser power meter: LPM-8001 (manufactured by LEADER)
   Oscilloscope (with 40MΩ band or more; Conduct probe CAL before measurement.)
   Digital voltmeter

4) If you monitor two or more signals on an oscilloscope, do not connect VC to GND inside the oscilloscope (Otherwise, short-circuit will occur between VC and GND.)

2.4 Adjusting the Laser Power

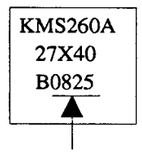
Connection:



Adjustment:

1. Install the later power meter on the objective lens of the laser pickup.
   (If it cannot be installed properly, move the pickup using the <-<- or ->-> key.)
   Connect the digital voltmeter to CN110 Pin 5 (I+3V) and CN110 pin 4 (IOP).
2. Turn the AMCS knob until "LDPWR ADJUS" is displayed.
   (Laser power: For adjustment)
3. Press the YES key to display "LD 0.9mW $□□".
4. Adjust AMCS knob such that the laser power reading becomes 0.86mW～0.92mW.
   Press the YES key to display "LD SAVE $□□".
5. Press the YES key to display "LD 7.0mW $□□".
6. Adjust AMCS knob such that the laser power reading becomes 6.9mWÅ`7.1mW.
   Press the YES key to display "LD SAVE $□□".
7. Turn the AMCS knob until "LDPWR CHECK" is displayed.
8. Press the YES key to display "LD 0.9mW $□□".
   Laser power meter reading: 0.85mW ～ 0.91mW

9. Press the YES key to display "LD 7.0mW $□□".
   Verify that the readings on the laser power meter and the digital voltmeter are within the value specified below:
   Standard value:
   Laser power meter reading: 7.0mW±0.1mW
   Digital voltmeter reading: Optical pickup displayed value ±10%
   (Optical pickup label)

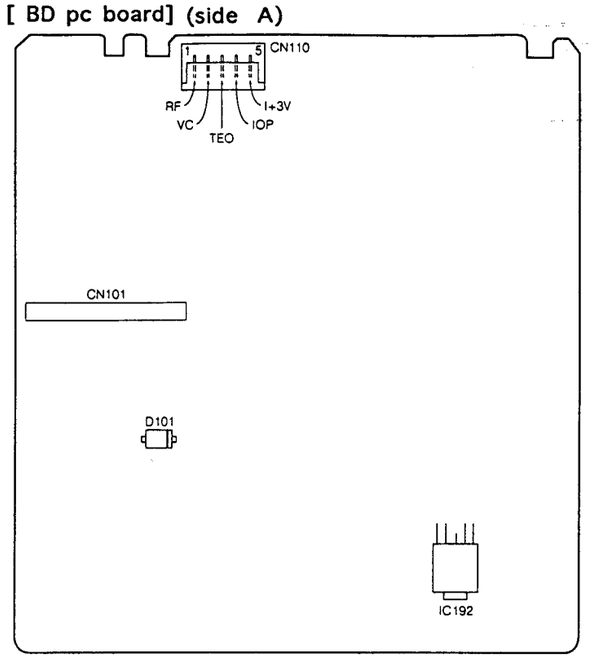


In this case, Iop=82.5mA
Iop (mA) = Digital voltmeter reading (mV)/1 (Ω)

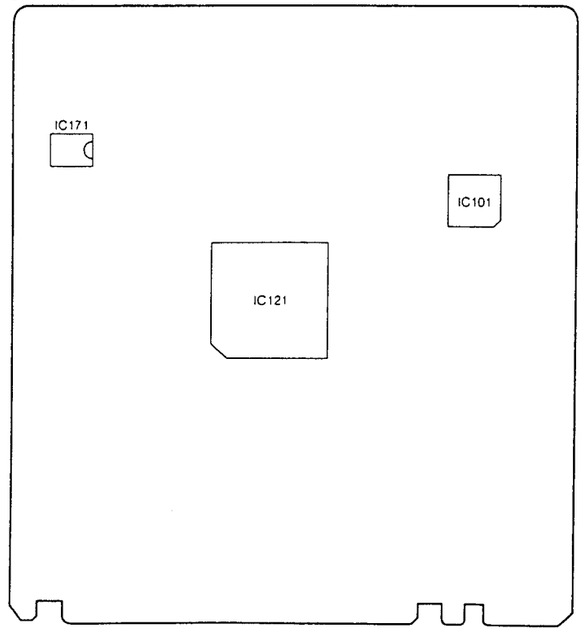
10. Press the NO key to display "LDPWR CHECK", then stop the laser emission.
    (The NO key is always accepted to stop the laser emission.)

2.5 Adjustment point

[BD pc board] (side A)



[BD pc board] (side B)



Message List

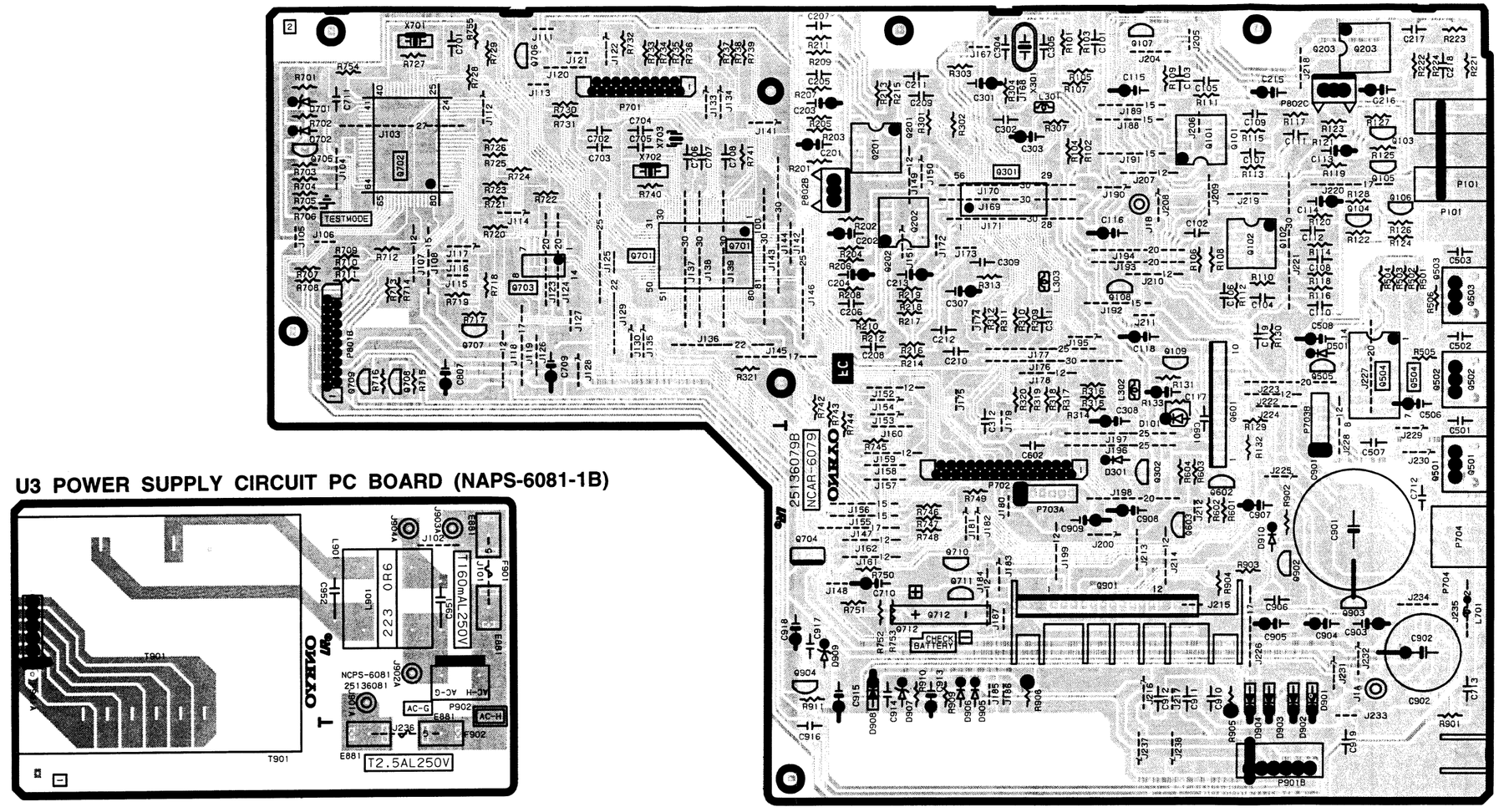
The following table explains the various messages that appear in the display.

Message	Meaning
All Erase!!	An attempt was made to record onto a faulty MD.
Blank Disc	A new (blank) or erased disc has been inserted.
Cannot Copy	An attempt was made to make a second copy from a digitally dubbed MD (see "Rules for Digital Recording" on page 62).
Cannot Edit	An attempt was made to edit the disc during MEMORY or RANDOM play.
Cannot Rec	An attempt was made to record onto a premastered (read-only) disc.
D. In Unlock	The digital equipment (CD player, DAT, etc.) has not been connected properly.
Disc Error	The disc is abnormal (scratched or missing a TOC).
Disc Full	The disc is full (see "System Limitations" on page 61).
Impossible	An editing attempt was failed.
Memory Full	An attempt was made to record a 26th track.
Name Full	The titling capacity of the disc has reached its limit.
No Change	The disc or track name was not changed.
No Disc	There is no disc in the unit.
No Track	The inserted disc has a disc title but no tracks.
Over	In pause mode (when playing is paused), the FF (Fast Forward) button was pressed to the end of the disc.
Protected	The inserted disc is record-protected.
Retry	The first recording attempt failed due to a disturbance or scratch on the MD, and a second recording is being made.
Retry Error	The recording attempt failed due to a consecutive disturbance or scratches on the MD.
Sorry	An attempt was made to combine tracks that cannot be combined or to divide a track at the beginning.

Even if "Disc Error" is displayed, you may be able to record on the disc. Press the ● REC button and, when "All Erase!!" appears in the display, try pressing the ● REC button again.

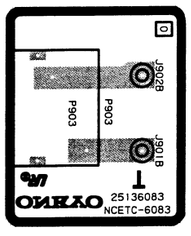
PRINTED CIRCUIT BOARD (BOTTOM VIEWS)

U1 MAIN CIRCUIT PC BOARD (NAAR-6079-1B)

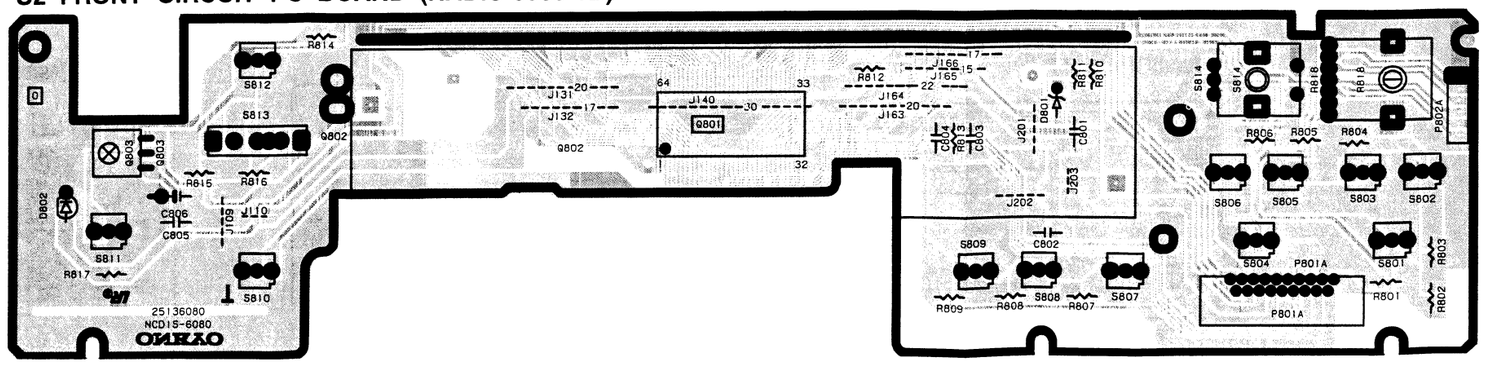


U3 POWER SUPPLY CIRCUIT PC BOARD (NAPS-6081-1B)

U4 AC OUTLET PC BOARD (NAETC-6083-1B)

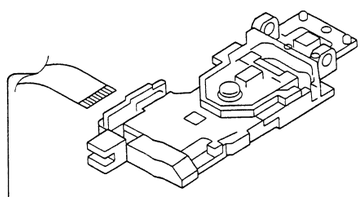


U2 FRONT CIRCUIT PC BOARD (NADIS-6080-1B)

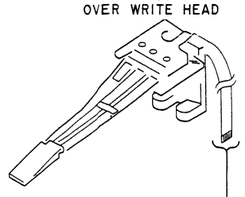


PRINTED CIRCUIT BOARD (BD SECTION)

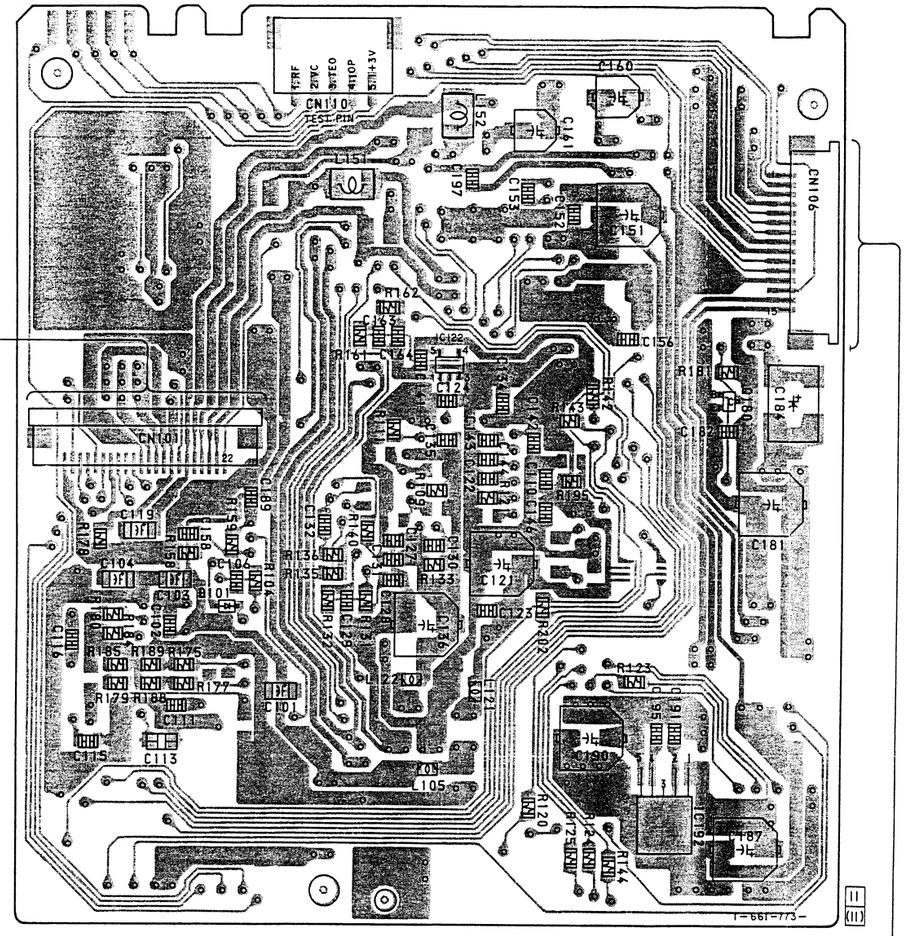
OPTICAL PICK-UP BLOCK
(KMS-260A/J1N)



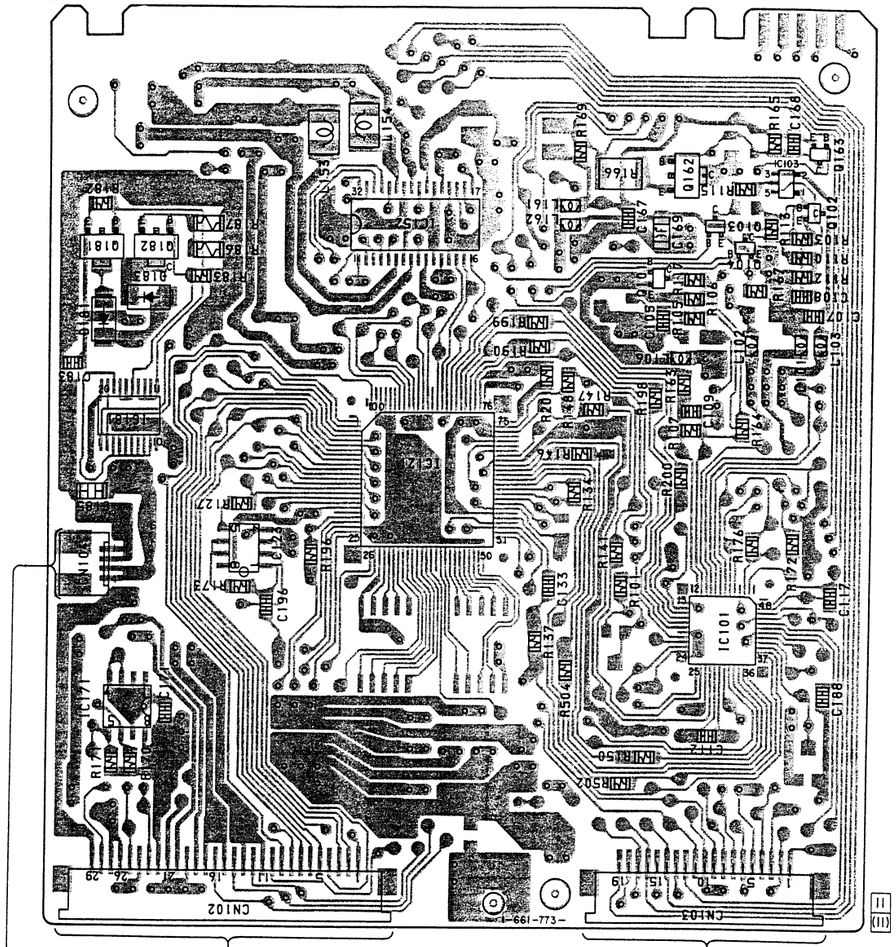
HR901
OVER WRITE HEAD



【BD BOARD】(SIDE A)



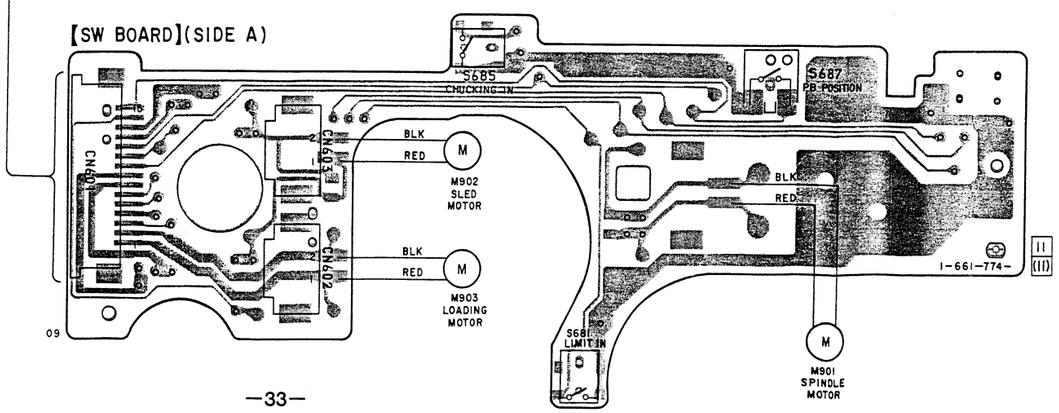
【BD BOARD】(SIDE B)



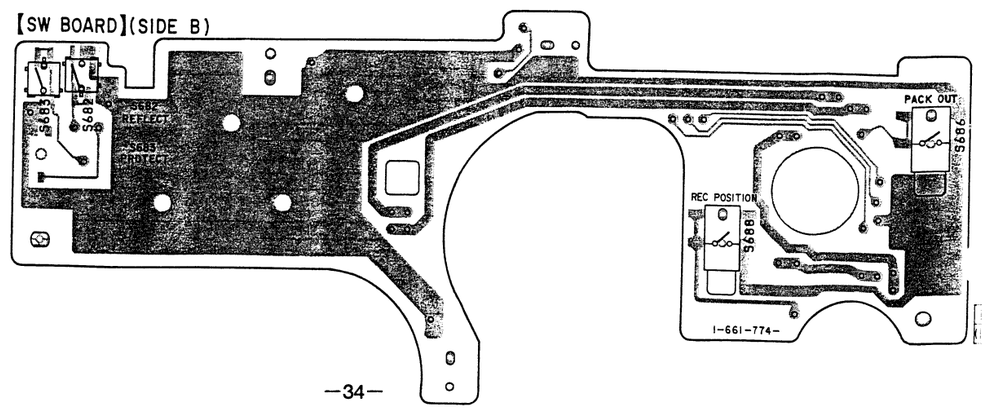
B MAIN BOARD CN304
(Page 47)

A MAIN BOARD CN305
(Page 47)

【SW BOARD】(SIDE A)



【SW BOARD】(SIDE B)



PRINTED CIRCUIT BOARD PARTS LIST

U1 MAIN CIRCUIT PC BOARD (NAAR-6079-1B)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q101,Q102	22240191	NJM4565D-D
Q107,Q108	222780063	78L06
Q201,Q202	22241112	NJM4580D-D
Q203	222956	NJM2068D-D
Q301	22241113R9	TLC320AD75C
Q302,Q505	222780023	78L02
Q504	222740005	74HC00P
Q601	22240848	LB1641
Q701	22241084R3	MB-M3(MSK)
Q702	22241115R3	M38067MC-243FP
Q703	22241081R2	TC74VHCT04
Q704	222780055JRC	78M05(NJM78M05FA)
Q901	22241077	LA5620
	Transistors	
Q103,Q104,Q105, Q106	2211705 or 2211706	2SD655-E or 2SD655-F
Q109	2212853 or 2212855	2SB1068-K or 2SB1068-U
Q602	2213105or 2213106	2SA1115-E or 2SA1115-F
Q603,Q903	2213570 or 221281	RN1207 or DTC114YS
Q705,Q706,Q710, Q711,Q902	2213590 or 2213090	RN2207 or DTA114YS
Q707,Q904	2213355 or 2213354	2SA933S-S or 2SA933S-R
Q708,Q709	2211705 or 2211706	2SD655-E or 2SD655-F
	Diodes	
D101	225290	SEL4110R
D301,D501,D702, D905,D906,D910	223222 or 223205 or 223163	WG713A or 1SS270A or 1SS133
D701,D907	224470562	MTZJ5.6B
D901-D904,D908	22380260 or 22380035	RL1N4003 or GP104003E
D909	224472704	MTZJ27D
	Battery	
Q712	3010277	IVR2025TVB
	Photo parts	
Q501	24120031	TOTX178
	Photo coupler	
Q502,Q503	24120037	TORX178A
	Coils	
L301,L302	233454K220	NCH-1452 220K
L303	233454K150	NCH-1452 150K
	Crystal	
X301	3010274	HC-49/UC3 22.5792MHz
X703	3010275	DT-3832KHz
	Ceramic lock	
X701	3010190	CST8.00MTW
X702	3010252	CST12.0MTW
	Capacitors	
C101,C102	374721015	100pF±10%, 50V, Plastic
C103,C104	374723915	390pF±10%, 50V, Plastic
C105,C106	374723315	330pF±10%, 50V, Plastic
C107,C108	374722215	220pF±10%, 50V, Plastic
C109,C110	374721824	1800pF±5%, 50V, Plastic
C111,C112	374724724	4700pF±5%, 50V, Plastic
C113,C114,C913	391961007	10 μ F, 35V, Elect.
C115,C116	391944717	470 μ F, 16V, Elect.
C117,C301,C303	391921017	100 μ F, 6.3V, Elect.
C118,C213,C307	391924717	470 μ F, 6.3V, Elect.
C119,C302,C309	374721044	0.1 μ F±5%, 50V, Plastic
C201,C202,C904	391980227	2.2 μ F, 50V, Elect.
C203,C204,C215	391962207	22 μ F, 35V, Elect.
C205-C208	374721015	100pF±10%, 50V, Plastic
C209,C210,C211	374724724	4700pF±5%, 50V, Plastic
C212	374724724	4700pF±5%, 50V, Plastic
C216	391962207	22 μ F, 35V, Elect.
C217,C218	374721015	100pF±10%, 50V, Plastic
C308,C506,C709	391922217	220 μ F, 6.3V, Elect.
C507,C906,C911	374721044	0.1 μ F±5%, 50V, Plastic
C508	391921017	100 μ F, 6.3V, Elect.
C706	374723344	0.33 μ F±5%, 50V, Plastic
C710,C908,C909	391922217	220 μ F, 6.3V, Elect.
C807,C903,C907	391980477	4.7 μ F, 50V, Elect.
C901	3500181	22000 μ F, 16V, Elect.
C902	391944727S	4700 μ F, 16V, Elect.
C905	391984797	0.47 μ F, 50V, Elect.
C910	374722244	0.22 μ F±5%, 50V, Plastic
C912	374721044	0.1 μ F±5%, 50V, Plastic
C915	391974707	47 μ F, 63V, Elect.
C918	391980477	4.7 μ F, 50V, Elect.
	Resistors	
R818	5104362	N14RGLS10KA15Z, Variable
R905	443524704	47ohm±5%, 1/2W, Metal oxide
R906	443520824	8.2ohm±5%, 1/2W, Metal oxide
	Jacks	
P101	25045397	NPJ-4PDWR222
P704	25045330 or 25045481	NPJ-2PDBL184 or NPJ-2PDBL299
	Sockets	
P701	25051771	NSCT-19P1558
P702	25051781	NSCT-29P1568
P801B	25051771	NSCT-19P1558
P901A	25051110	NSCT-6P897
P901B	25050270	NSCT-6P98
	Plugs	
P802B,P802C	25055147	NPLG-3P131
	Socket AS	
P703	2009990456	NSAS-12P0610
P802A	2009990458	NSAS-12P0612
	Rotary encoder	
S814	25065507	EC11B15244
	Radiator	
E858	27160381	RAD-108
	Holder	
E860	27191009	(FL)

U2 FRONT CIRCUIT PC BOARD (NADIS-6080-1B)

CIRCUIT NO.	PART NO.	DESCRIPTION
	IC	
Q801	22240685R9	M66004FP
	Diodes	
D801	224470623	MTZJ6.2C
D802	225290	SEL4110R
	Capacitor	
C806	355721019	100 μ F, 6.3V, Elect.
	Socket	
P801A	25051799	NSCT-19P1586
	FL tube	
Q802	212161	BJ556GK
	Remote sensor	
Q803	241302	PIC-12043TH2
	Switches	
S801-S812	25035652	NPS-111-S604
S813	25065386	NSS-13147

U3 POWER SUPPLY CIRCUIT PC BOARD (NAPS-6081-1B)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitor	
C951, C952	⚠ 3300001	0.01 μ F+80%-20%, 250V, Ceramic
	Coil	
L901	⚠ 231252	NCH-3489
	Plug	
P902	⚠ 25055675	NPLG-2P631

U4 AC OUTLET PC BOARD (NAETC-6083-1B)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Socket	
P903	⚠ 25050684	NSCT-2P488

MD MECHANISM PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
201	4628-167-01	Screw
202	4987-327-01	Insulator
206	1660-966-11	Flexible flat cable, Optical pick-up
207	A4699-615-A	BD pc board ass'y
208	1777-517-11	Flat cable (15 wire)
209	4987-910-01	Spring coil
251	A4672-138-A	Slider ass'y
252	4983-439-01	Bracket (Dumper)
253	3953-235-01	Oil dumper
254	4983-437-01	Slider (cam)
255	3342-375-11	Special screw (M1.7X1.4)
256	4979-890-31	Bracket (Gear)
257	4979-898-01	Gear (LB)
258	4979-899-01	Gear (LC)
259	4979-897-21	Gear (LA)
260	4979-885-01	Lever (Head up)
261	4979-906-01	Leaf spring (lead screw)
262	4984-556-01	Shaft (main shaft)
263	1661-774-11	SW pc board
264	A3304-200-A	Lead screw ass'y
265	4963-914-02	Luck (inserter)
266	3366-890-11	nylon lock (M1.4)
267	8583-028-01	Optical pick-up (KMS-260A/J1N)
268	4987-061-01	Spacer (luck)
HR901	1500-396-11	Over write head
M901	A4672-135-A	Sprindle motor ass'y
M902	A4672-133-A	Slid motor ass'y
M903	A4672-134-A	loading motor ass'y
CN101	1766-508-11	FFC/FPC connector (22P)
CN102	1778-461-11	FFC/FPC connector (29P)
CN103	1778-460-11	FFC/FPC connector (19P)
CN104	1766-898-21	Connector (4P)
CN106	1770-698-11	FFC/FPC connector (15P)
CN110	1774-731-21	Connector pin (5P)
D101	8719-988-62	Diode,1SS355
D181,D183	8719-046-86	Diode, F1J6TP
IC101	8752-074-77	IC, CXA2523R
IC103	8729-903-10	Transistor, FMW1
IC121	8752-378-54	IC, CXD2650R
IC122	8759-234-20	IC, TC7S08F
IC123	8759-242-70	IC, TC7WU04F
IC152	8759-430-26	IC, BH6511FS
IC171	8759-428-58	IC, XL24C01AF
IC181	8759-095-65	IC, TC74ACT540FS
IC192	8759-426-95	IC, L88MS33T-FA-TL
L101-L103,L105, L106,L121,L122, L161,L162	1414-235-11	Ferrite bead
L151,L152	1412-622-51	Coil
L153,L154	1412-039-51	Coil
Q101,Q163	8729-403-35	Transistor, UN5113
Q102	8729-026-52	Transistor, 2SA1576A-T106-QR
Q103,Q104	8729-014-04	Transistor, RN1307-TE85L
Q162	8729-101-07	Transistor, 2SB798-DL
Q180	8729-907-00	Transistor, DTC114EU
Q181	8729-018-75	FET, 2SJ278MY
Q182	8729-017-65	FET, 2SK1764KY
CN601	1770-698-11	FFC/FPC connector (15P)
CN602,CN603	1778-638-21	Connector pin (2P)
S681	1572-467-61	Push switch (1 key), Limit in
S682	1692-377-31	Push switch (2 key), Reflect
S683	1692-847-21	Push switch (3 key), Protect
S685	1572-467-41	Push switch (4 key), Chacking in
S686	1762-621-21	Push switch (5 key), Pack out
S687	1572-688-11	Push switch (6 key), Rec. position
S688	1762-621-21	Push switch (7 key), Rec. position
#1	7627-852-68	Special screw (+P 1.7x6 type 3)
#2	7627-552-08	Special screw (+P 1.7x2.5 type 1)
#3	7621-255-45	Special screw (+PTT 2x6 S)
#4	7621-255-10	Special screw (+BVTT 2x3 S)
#5	7627-553-17	Special screw (+P 2x2 type 3)
#6	7627-852-28	Special screw (+P 1.7x3 type 3)

SCHEMATIC DIAGRAM (1) BD SECTION

【BD BOARD】

IC181
OVER WRITE HEAD DRIVE

IC103
HF MODULE 5V

IC101
RF AMP

IC122
BUFFER

IC152
SLED/SPINDLE MOTOR DRIVE, FOCUS/TRACKING COIL DRIVE

F G H I J K

IC121

IC121
CXD2650R

DIGITAL SIGNAL PROCESSOR
DIGITAL SERVO SIGNAL PROCESSOR
EFM/ACIRC ENCODER/DECODER
SHOCK PROOF MEMORY CONTROLER
ATRAC ENCODER/DECODER
2M BIT DRAM

IC123

512FS BUFFER

IC171

IC171
XL24C01AF
EEPROM

IC192

+5V REG

IC192
LRHM5331

CN103 19P

TP149	SENSE	1
TP150	MNT1 (SHCK)	2
TP139	8QSY	3
TP140	8IG-RST	4
TP137	SQSY	5
TP138	SCL	6
TP135	XINT	7
TP136	MNT2 (XBUSY)	8
TP133	LBON	9
TP134	GND	10
TP165	MOD	11
TP128	REC-P	12
TP131	REFLECT	13
TP145	PB-P	14
TP132	PROTECT	15
TP146	CHACK-IN	16
TP147	LIMIT-IN	17
TP130	PAC-IN	18
TP129	PAC-OUT	19

(A) MAIN BOARD CN305

CN102 29P

TP92	SCLK	1
TP91	SRBT	2
	XLATCH	3
TP90	WRPWR	4
	SWBT	5
TP81	MNT3 (SLOCK)	6
TP84	MNT0 (FOK)	7
TP89	SBA	8
TP144	SCTX	9
TP110	ABBT	10
TP143	MGNB	11
	BCK	12
TP109	MGNB	13
TP104	GABT	14
TP111	M+5V	15
TP113	LRCK	16
TP103	M+5V	17
TP112	LOAB-IN	18
TP191	GNB	19
TP98	LOAB-OUT	20
TP94	GNB	21
TP102	3.3V	22
TP97	8IN	23
TP105	M+5V	24
	8OUT	25
TP126	+5V	26
TP96	+5V	27
	512FS	28
	MGNB	29

(B) MAIN BOARB CN304

【SW BOARD】

CN104 15P

	PB-P	1
	REC-P	2
	SPBL-	3
	SPBL+	4
	CHACK-IN	5
	PAC-OUT	6
	PAC-IN	7
	SLEB-	8
	SLEB+	9
	REFLECT	10
	PROTECT	11
	GNB	12
	LIMIT-IN	13
	LOAB-OUT	14
	LOAB-IN	15

CN401 15P

15	PB-P	S687 S688 PB POSITION REC POSITION
14	REC-P	
13	SPBL-	M901 SPINDLE MOTOR
12	SPBL+	
11	CHACK-IN	S685 S686 CHUCKING IN PACK OUT
10	PAC-OUT	
9	PAC-IN	
8	SLEB-	CN403 2P M902 SLED MOTOR
7	SLEB+	
6	REFLECT	S682 S683 REFLECT PROTECT
5	PROTECT	
4	GNB	
3	LIMIT-IN	S681 LIMIT IN
2	LOAB-OUT	CN402 2P M903 LOADING MOTOR
1	LOAB-IN	

1

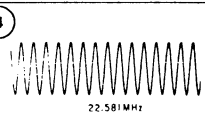
0.46Vp-p
IC101 (1),(2) (I,J)(PLAY mode)

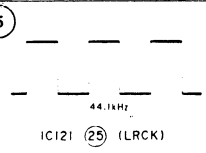
2

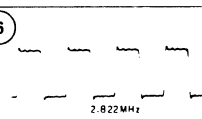
0.1Vp-p
IC101 (4) (A)(PLAY mode)

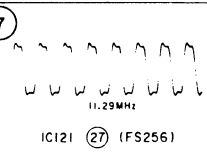
3

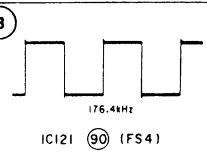
0.06Vp-p
IC101 (8),(9) (E,F)(PLAY mode)

4

3.1Vp-p
22.581MHz
IC121 (16) (OSC1)

5

3.2Vp-p
44.1kHz
IC121 (25) (LRCK)

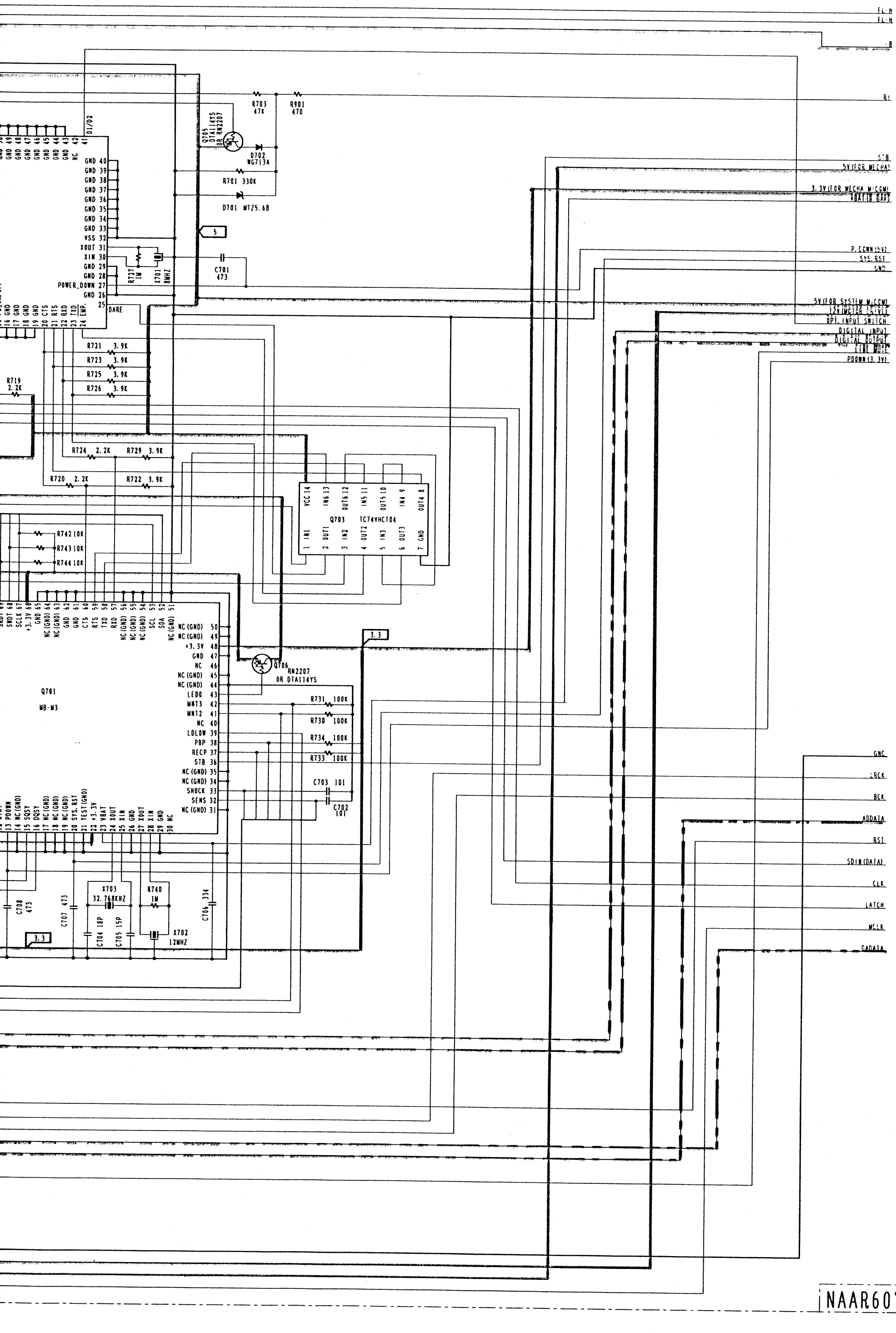
6

3.8Vp-p
2.822MHz
IC121 (26) (XBCK)

7

3.8Vp-p
11.29MHz
IC121 (27) (FS256)

8

3.2Vp-p
176.4kHz
IC121 (90) (FS4)

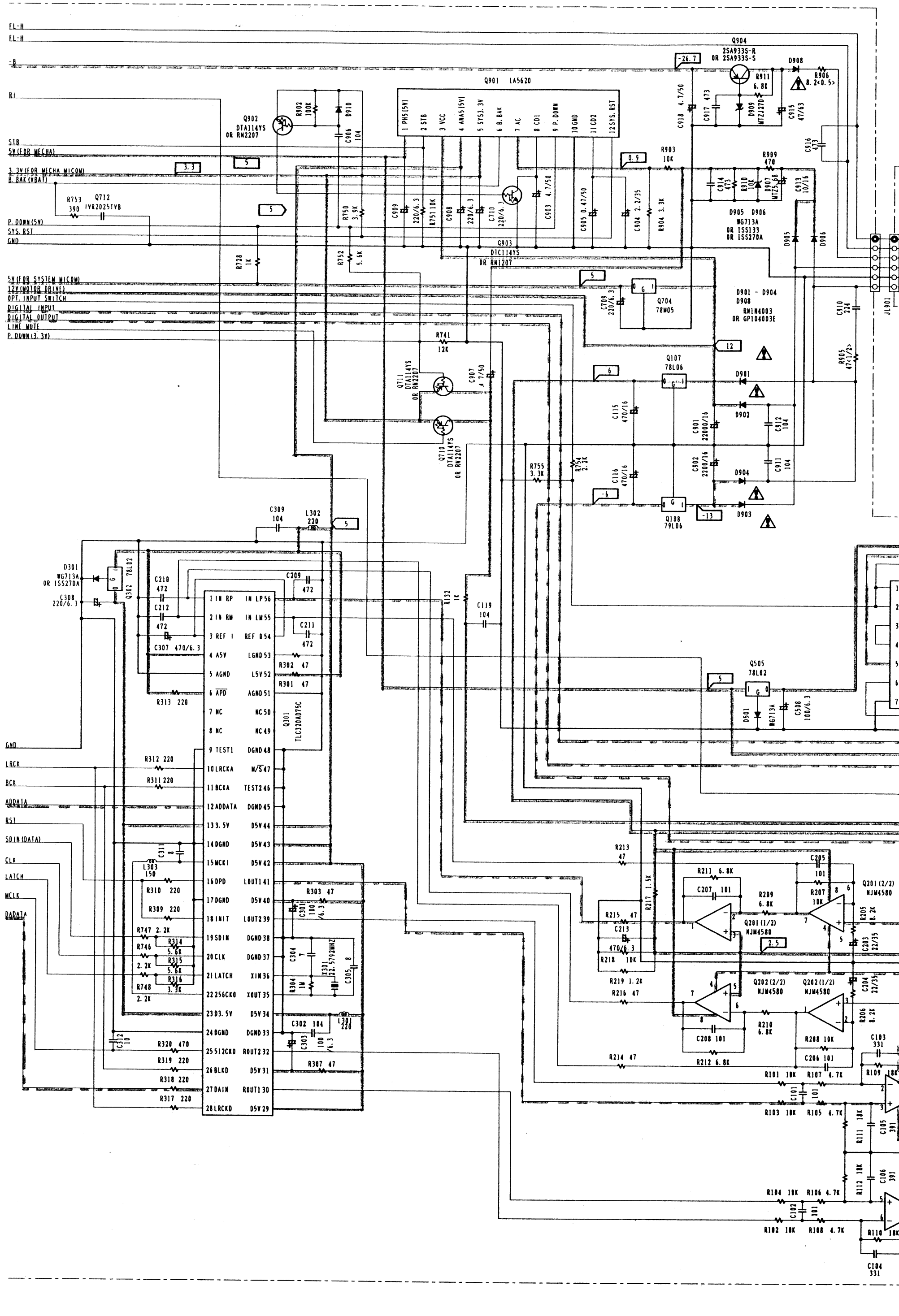
SCHEMATIC DIAGRAM (2)

F G H I J K



NAAR6079

SCHEMATIC DIAGRAM (3) DISPLAY / POWER SUPPLY SECITION



F G H I J K

NADIS6080

NAETC6084

NAPS6081 (UP)

NAAR6079

: + B LINE

: − B LINE

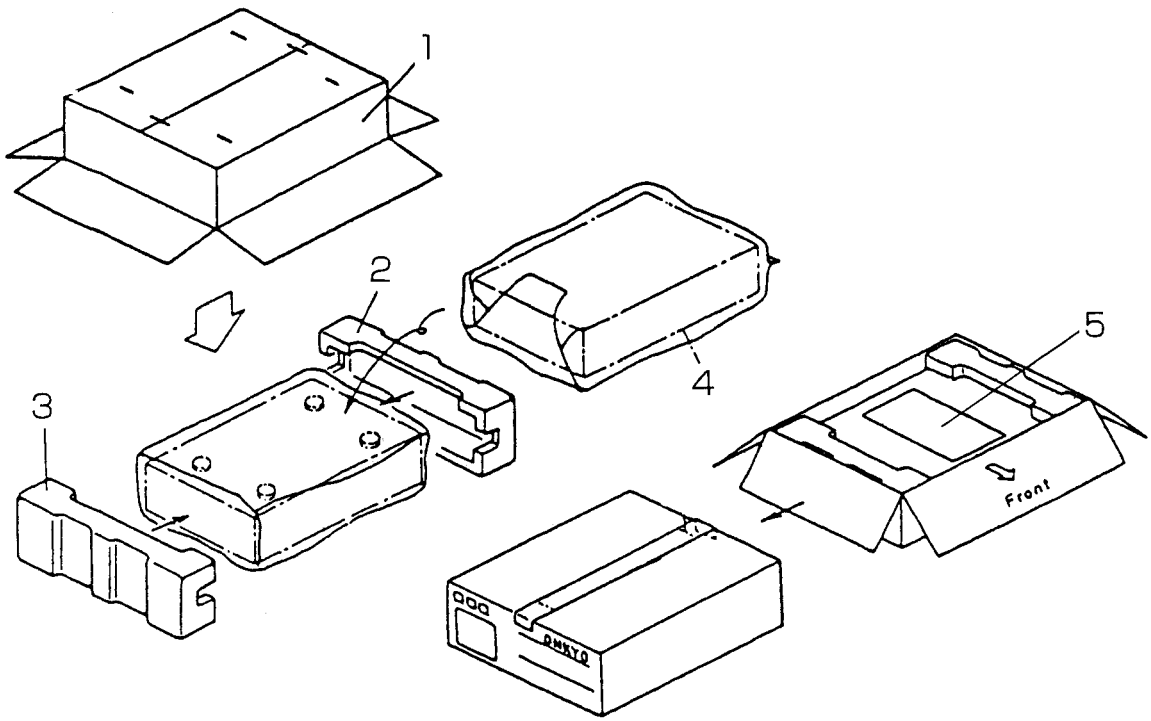
: RECORDING SIGNAL

: PLAYBACK SIGNAL

NOTE

- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE(MEASURED WITH VOLTMETER) ⬭ IS DC VOLTAGE. (NO INPUT SIGNAL)
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (⊣+) ARE IN uF/WV.
- ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED.
  EX) 030=3pF 330=33pF 331=330pF 333=0.033uF
- ALL RESISTORS ARE IN OHMS 1/4WATTS UNLESS OTHERWISE NOTED.
- THE THICK LINES ON PC BOARD ARE THE PRINTING SIDE OF THE PARTS.
  EX) ⬭ PRINTING SIDE
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

PACKING VIEW



PACKING VIEW PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
1	29053174	Carton box
2	29091698	Pad (L)
3	29091699A	Pad (R)
4	29100037-1A	Polythene bag, 650*500
	282321	Staple
	29110071	PP tape
5	Accessary bag ass'y	
	29342487	Instruction manual, U3EFG
	29355267	Instruction sheet
	24140339	Remote unit, RC-339MD
	3010054	Battery, UM-3
	29095728	Sheet
	29095729A	Sheet
	29100097-1A	Polythene bag, 350*250
	2010098A or	Pin cord AS
	2010326	
	2010200	3.5 mini plug (RI)